NATIONAL CAR BUILDER

VOLUME XI. | NUMBER 10. |

DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

$1.00 PER ANNUM. | SINGLE NUMBERS, TEN CENTS.

NEW YORK: **Published at 5 and 7 Dey St.**

OCTOBER, 1880.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS MAIL MATTER OF THE SECOND CLASS.

CHICAGO: **40 Dearborn Street.**

RAILWAY PUBLICATIONS.

The following publications will be mailed on receipt of price by the NATIONAL CAR-BUILDER:

BOOKS.

Catechism of the Locomotive (Forney)	$2.50
Roadmaster's Assistant (Huntington & Latimer)	1.50
Railway Revenue (Kirkman)	2.50
Railway Train and Station Service (Kirkman)	2.00
Railway Baggage Car Traffic (Kirkman)	2.00
Railway Builder (Nicholls)	2.00
Friction and Lubrication (Thurston)	1.50
Car-Builders' Dictionary	2.00
Foor's Railroad Manual for 1880	5.00

PAMPHLETS.

Cost of Passenger Traffic (Fink)	75 cts.
Cost of Railroad Transportation (Fink)	75 "
Railroad Employés in France (Jacqmin)	25 "
The Verrugas Viaduct (Pontzen)	40 "
Standard and Narrow Gauge (Von Weber)	25 "
Railroad Local Passenger Traffic (F. J. Lee)	25 "
Taxation of Railroads and Railroad Securities	25 "
Standard Car and Tender Axle Drawings	20 "
Bridge Disasters in America	25 "

CONTENTS.

	Page.
ILLUSTRATIONS:	
Standard Freight Box Car—N. Y., N. H. & H. R. R.	157
The Hewet Safety Valve	159
Safety Chain Coupling for Passenger Cars	161
Gowan's Chilled Car Wheel Tracing Machine	163
COMMUNICATIONS:	
Railroad Enterprise in South Africa	158
New Standard Freight Box Cars	158
EDITORIALS:	
A Prize for a Cattle Car	165
Four and Six-Wheel Trucks	165
Primitive Railway Rolling Stock	165
MISCELLANEOUS:	
The Train Boys	155
Some New Wagner Sleeping Coaches	156
New York, Wood Haven & Rockaway R. R	160
An Underground Railway in New York	161
A North Pacific Farm Produce Car	161
Railway Frogs and Curve Elevation	162
Master Car Painters' Association	162
The First Sleeping Car	166
Miscellaneous Items	164

FOR SALE.

THE RIGHT, TITLE, INTEREST

(AND AUTHORSHIP IF DESIRED),

OF

AN ELEGANT SUBSCRIPTION BOOK.

Five fine steel portraits, with the exclusive use of another. Five hundred unbound copies, 700 pages. First-class in every way.

Octavo, 25 × 38. A copy can be had in half morocco for $2.25—sells for $4.50.

The price asked is $2,000, cash.

Address

JOHN McGOVERN,
633 West Monroe street,
Chicago, Ill.

NATIONAL CAR-BUILDER DIRECTORY.

Air Brakes: PAGE.
Eames Vacuum Air Brake Co., 15 Gold st., New York.. xii
Westinghouse Air Brake Co., Pittsburgh, Pa.. xiii

Axles:
Nashua Iron & Steel Co., H. L. Leach, Agent, Boston.. xxii
Midvale Steel Works, Phila.. vii

Bolts:
Hoopes & Townsend, Philadelphia, Pa.. vii

Brass and Copper Rolling Mills:
Wallace & Sons, New York (cover).. 4

Cars:
Barney & Smith Manufacturing Co., Dayton, O.. x
Cleveland Bridge & Car Works, Cleveland, O.. iv
Davenport, Fairbairn & Co., Erie, Pa.. iv
Erie Car Works, Erie, Pa.. iv
Harlan & Hollingsworth Co., Wilmington, Del.. ix
Harrisburg Car Mfg. Co., Harrisburg, Pa.. xxii
J. M. Jones & Co., Schenectady, N. Y.. x
Michigan Car Co., Detroit, Mich.. iii
Mowry Car and Wheel Works, Cincinnati, O.. i
New England Car Co., Boston, Mass.. xiv
John Stephenson & Co., New York, N. Y.. xxiv
Wason Manufacturing Co., Springfield, Mass. (cover).. 3

Car Brake Shoes:
Congdon Brake Shoe Co., Chicago, Ill.. ii

Car Brass Grinding Machine:
Tanite Co., Stroudsburg, Pa. (cover).. 4

Car Couplers:
E. P. Dwight, Philadelphia, Pa.. vi

Car Glass:
Theo. W. Morris & Co., 27 Chambers st.. vi

Carpets:
W. & J. Sloane, New York.. xxiii

Car Seats:
Hale & Kilburn Mfg. Co., Phila., Pa.. xii
Herz & Co., 313 East Twenty-second st., N. Y.. xxiii

Car Springs:
Boston Car Spring Co., 60 Federal st., Boston.. xxiv
Columbia Car Spring Co., 322 Seventh avenue, N. Y.. vi
Culmer Spring Co., Pittsburgh, Pa. (cover).. 2
Detroit Car Spring Co., Detroit, Mich.. iii
Diamond State Car Spring Co., Wilmington, Del.. ii
Miller, Metcalf & Parkin, Pittsburgh, Pa. (cover).. 3
National Car Spring Co., 13 Barclay st., New York.. iv
West Bergen Car Spring Co., 5 Dey st., N. Y. (cover).. 3

Car Steps:
Rubber Step Manf'g Co., Boston, Mass.. vii

Car Stove:
A. P. Winslow & Co., Cleveland, O.. viii

Car Trucks:
Thielsen Truck Co., Chicago, Ill.. xv

Car Wheels:
Allen's Paper Car-Wheel Co., 240 Broadway, N. Y.. xxii
Baltimore Car Wheel Co., Baltimore, Md.. x
Bowler & Co., Cleveland, O.. xxiv
Cayuta Wheel & Foundry Co., Waverly, N. Y.. xxiii
Davenport, Fairbairn & Co., Erie, Pa.. iv
Detroit Car Wheel Co., Detroit, Mich.. iii
Jersey City Wheel & Foundry Co., Jersey City, N. J.. xxiv
Lobdell Car Wheel Co., Wilmington, Del.. ix
Maher & Brayton, Cleveland, O.. xv
Mowry Car & Wheel Works, Cincinnati, O.. i
Ramapo Wheel & Foundry Co., Ramapo, N. Y. (cover).. 3
Taylor Iron Works, High Bridge, N. Y.. xxiii
A. Whitney & Sons, Philadelphia, Pa.. iv

Chilled Car-Wheel Grinding Co:
Carson, Nevada, Box 55—Chicago, Ill., Box 382.. x

Desks:
Moore's Patent Combination Desk, Indianapolis, Ind.. xxi

Door Hanger:
Prescott Manuf'g Co., Boston, Mass. (cover).. 2

Draw-Bars:
"Butler's Excelsior," Cincinnati, O.. iv
Continuous Draw-Bar Co., Cincinnati, O.. ii
J. B. Safford, Buffalo, N. Y.. xv

Drills:
Morse Twist Drill & Machine Co., New Bedford, Mass.. xxiii

Emery Wheels:
The Tanite Co., Stroudsburg, Pa. (cover).. 4

Engraving:
Northwestern Eng. Co., 182 & 184 Dearborn st., Chicago, Ill. xiii

Flexible Shafting:
Stow Flexible Shaft Co., Philadelphia, Pa.. iv

Frogs & Crossings:
H. & H. Elliot, East St. Louis, Ill.. i

Grain Door:
Van Llew's, Aurora, Ill.. vii

Hand-car:
Sheffield Velocipede, H. W. Peabody & Co., Boston, Mass. i

Hydraulic Jacks:
R. Dudgeon, 24 Columbia st., New York.. vii

Injectors:
"Hancock Inspirator Co." Boston.. xiii

Journal Bearings:
George R. Meneely & Co., West Troy, N. Y.. xv
Phosphor-Bronze Smelting Co., Philadelphia, Pa.. xxiii
A. V. Pitts & Co., Chicago, Ill.. xiii

Journal Box Lids:
Hewitt Box Lid Cover Co., Chicago.. ii

Leather:
T. P. Howell & Co., 77 Beekman st., N. Y.. xv

Lifting Jack:
Joyce & Cridland, Dayton, O.. xv

Locomotives:
Baldwin Locomotive Works, Philadelphia, Pa.. xii
Hinckley Locomotive Co., Boston.. xii
Manchester Locomotive Works.. xii

Locomotive Brass and Copper Tubes:
Wallace & Sons, New York (cover).. 4

Locomotives For Sale:
A. C. Armstrong, P. A., Cleveland, O. (cover).. 4

Lubricators:
Albert Bridges, 40 Courtland st., New York.. xxiv
Eagle Car-Box Lub. Co.. xxiii
A. Middleton, 945 Ridge ave., Philadelphia, Pa. (cover).. 2

Machinery:
S. C. Forsaith & Co., Manchester, N. H.. xxii and xxiv
Rollstone Machine Co., Fitchburg, Mass.. xxiv

Mahogany, Fancy Woods & Veneers:
John R. Graham, New York.. iv
C. C. Houghton & Sons, 8 Howard street.. iii
J. H. Monteath, 151 Centre street, New York.. xxii
Geo. W. Read & Co., 180 Lewis st., N. Y.. iv
The E. D. Albro Co., Cinbinnati, O. (cover).. 2
James T. Allen, 233 Canal St., New York.. 166

Marqueterie:
J. Bernard, 161 Greene st., N. Y.. xxiii

Oil-Box Covers:
Vulcanized Fibre Co., Wilmington, Del.. xxi

Oils:
Galena Oil Works (Limited), Franklin, Pa.. xxiv
Plumbago Oil Co., Rochester, N. Y.. vii

Paints:
Iron Clad Paint Co., Cleveland, Ohio (cover).. 2
St. Louis Impenetrable Paint Co., St. Louis. (cover).. 2

Power Hammers:
Bradley & Co., Syracuse, N. Y.. iv
Philip S. Justice, Philadelphia.. xxii

Plushes:
A. T. Stewart & Co., New York.. x

Publications:
The "Railway Engineer," London, Eng.. —
"Engineering," Lenox Smith, 50 Broadway, New York. xiii

Pumps:
Rumsey & Co., Seneca Falls, N. Y.. vi
H. R. Worthington, 239 Broadway, New York. (cover).. 2

Railroad Supplies:
L. G. Tillotson & Co., 5 and 7 Dey st., New York.. ii

Reclining Chairs:
Marks, New York City.. xxiii

Railroad Ties:
Bentley, Gildersleeve & Co., New York.. iv

Safes:
W. H. Butler, 291 Broadway, New York.. xiii

Safety-Nut:
The Atwood Safety-Nut Co., Springfield, Mass (cover).. 3

Safety Valves:
Ashton Valve Co., Boston, Mass.. xii

Scales:
Fairbanks & Co., 311 Broadway, New York.. xiii

Shade Rollers:
S. Hartshorn, 486 Broadway, N. Y.. x

Sheet and Bolt Copper:
Wallace & Sons, New York (cover).. 4

Signals:
Union Electric Signal Co., Boston, Mass.. iv

Steam Forges:
Baugh Steam Forge Co., Detroit, Mich.. iii
Cleveland Steam Gauge Co.. iii

Sheet-Iron:
W. D. Wood & Co., Pittsburgh, Pa.. xxii

Steel:
Crescent Steel Works, Pa. (cover).. 3
Midvale Steel Works, Philadelphia, Pa.. vii
Standard Steel Works.. xxiv
Thomas Turton & Sons, Boston, Mass.. iii

Steel Castings:
Chester Steel Casting Co., Philadelphia, Pa.. ii
Eureka Cast-Steel Co., Philadelphia, Pa. (cover).. 3
Midvale Steel Works, Philadelphia.. vii

Steel Tires:
Midvale Steel Works, Philadelphia.. vii

Screw Jack:
E. L. Morse, St. Louis, Mo. (cover).. 2

Tackle Blocks:
Bognall & Loud, Boston, Mass (cover).. 3

Taps and Dies:
The Pratt & Whitney Co., Hartford, Conn. (caver).. 2

Telescope Jack:
Albert Bridges, 40 Courtland st., New York.. xv

Track Tools:
Huntington Track Gauge.. viii
Metcalf, Paul & Co, Pittsburgh, Pa.. xxiv

Varnishes:
John Babcock & Co., Boston, Mass.. x
Berry Brothers, Detroit, Mich.. vi
Murphy & Co., Newark, N. J.. i
Parrott Varnish Co., Bridgeport, Conn. (cover).. 4

Ventilators:
Globe Ventilator Co.. vii

Watchman's Time Detector:
J. E. Buerk, Boston, Mass.. xi

White Lead:
T. T. Lewis & Brothers, Philadelphia, Pa.. x

Wire Fence:
American Fencing Co., New York (cover).. 2
Washburn & Moen, Worcester, Mass.. xxiii

Wood-Working Machinery:
J. A. Fay & Co., Cincinnati, Ohio.. v
Goodell & Waters, Philadelphia, Pa.. xv
Lane & Bodley Co., Cincinnati, O.. vi
C. B. Rogers & Co., Norwich, Conn.. xv
Rollstone Machine Co., Fitchburg, Mass.. xxiv
Witherby, Rugg & Richardson, Worcester, Mass. (cover). 4

Wrenches:
Little Giant, Chicago, Ill.. ii

Yellow Pine Lumber:
Bentley, Gildersleeve & Co., 150 Malden Lane, N. Y.. iv

IRON CLAD PAINT.

Trade-Mark Patented.

This Paint is used by nearly all the Railroads in the Country.

Used by L. S. & M. S., Wabash R'y, C., C. & I. R'y, C. & P. R'y, C., H. & D. R. R., Cincinnati Southern R'y, N. Y., L. E. & W. R'y (Erie), Southern Central R. R., Canada Southern, Mobile & Ohio, N. O. & Mobile, Macon & Brunswick, Penn. R. R., C., M. & St. P. R'y, A. & N. R'y, R. & D. R'y, Carolina Central, P., C. & St. L. R'y, P. & E. R. R., M., L. S. & W. R'y, K. & D. M. R'y, W. C. & A. R. R., M., L. & N. R'y, N. C. & St. L., N. I. & E. R. R., I. & G. N. R. R., etc., etc.

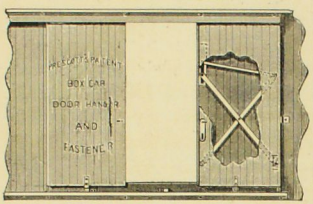
IRON CLAD PAINT CO., Cleveland, Ohio.

PRESCOTT'S

Patent Door Hanger.

SIMPLE, CHEAP AND DURABLE.

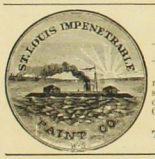
FOR SLIDING DOORS. MOVES EDGEWISE WITHOUT SUPPORT FROM ABOVE OR BELOW. NO TRACK OR ROLLS.



Adapted to Box Cars it has many advantages. Doors will not bind from swelling or sagging of car, nor from ice or snow. Fireproof joints and no track to bend. Highly commended by many experts after thorough trial.

The Truss Hanger for Freight Houses, Barns, Sheds, Stables, Baggage-Car Doors, etc., works perfectly. Hundreds of first-class references. Send for Circulars.

THE PRESCOTT M'F'G CO.,
237 Washington St., Boston, Mass.



Sole Manufacturers of A Glossy, Durable, Waterproof

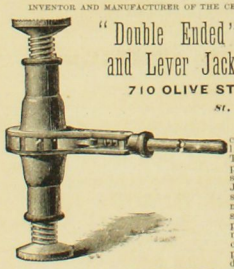
PAINT,

Specially adapted for use on railroads, being a perfect preserver and preventer of rust and corrosion. Adopted by the British Government for all public work.

ST. LOUIS IMPENETRABLE PAINT CO.,
421 N. 12th st., St. Louis, Mo.

E. L. MORSE,

INVENTOR AND MANUFACTURER OF THE CELEBRATED



"Double Ended" Ratchet and Lever Jack Screws,

710 OLIVE STREET,

St. Louis, Mo.

No friction except from the load lifted. Therefore more power than any single Screw Jack with the same speed, or more speed with same power applied. All sizes made. For prices and further particulars, address

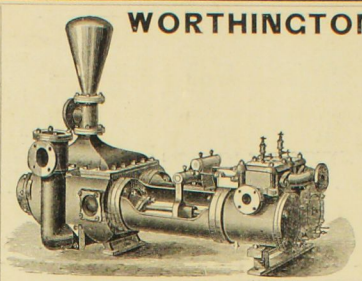
E. L. MORSE,
710 Olive Street (Room 1), St. Louis, Mo.

TAPS, DIES AND GAUGES,

U. S. OR SELLERS & WHITWORTH STANDARD.

THE PRATT & WHITNEY CO.,
Hartford, Conn.

Illustrated Catalogues and Price Lists furnished on application.



WORTHINGTON STEAM PUMP,

For all Purposes and of all Sizes. Special Patterns for Railway Water Stations, Oil Pipe Lines, Hydraulic Elevators, etc.

Prices below those of any other Steam Pump in the Market.

SEND FOR CIRULAR.

Henry R. Worthington,

239 BROADWAY, NEW YORK. 83 WATER ST., BOSTON. 709 MARKET ST., ST. LOUIS.

THE E. D. ALBRO COMPANY,

DIRECT IMPORTERS OF

MAHOGANY,

WHICH WE MANUFACTURE

In Sizes Especially Adapted for Car-Builders.

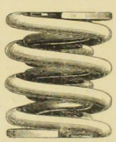
ESTIMATES FURNISHED ON APPLICATION. ALSO, MANUFACTURERS OF

FRENCH WALNUT VENEERS,

And General Cabinet Woods.

Mills and Warehouse: 685 to 707 West Sixth Street, Cincinnati.

CULMER SPRING CO.



Railway Car Springs,

Spiral Buffer, Freight Bolster, Journal and Equalizing Bar Springs.

SPIRAL SPRINGS of all Descriptions A SPECIALTY.

Office and Works: Corner 26th and Liberty Streets,

HENRY A. BREED,
General Manager and Treasurer.

PITTSBURGH, PA.

DENISON'S PATENT COOLING AND LUBRICATING COMPOUND,

FOR COOLING AND LUBRICATING HOT JOURNALS.

DIRECTIONS.—For cars or engines, pack the box so that the Compound will come in contact with the bearing and journal, using waste saturated with oil; also moisten the Compound with oil.

For shafting and places where waste can not be used, mix the Compound with oil, and apply to the bearing. If the bearing be very hot, the first application may run off, but two or three applications will cool it.

When a journal is hot, don't cool it with water, but apply the Compound; **and no matter how hot it is, it will cool it while in motion.**

When you apply new bearings, fill them with the Compound before putting them on the axle, and pack the sides of the box next to the bearing with the Compound, and your boxes will run cool.

For Sale by

ALLEN MIDDLETON, 945 Ridge Ave., Philadelphia. C. A. SMITH, 113 Liberty St., New York.

AMERICAN BARB FENCE WIRE.

PAINTED, JAPANNED OR GALVANIZED.

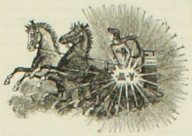
This Wire contains six times as many Barbs per foot as any other, and is the only Fence that is as efficient against small as against large animals. It will not slip through the Staple, and is the only Barb Wire that is **Galvanized after it is Finished,** which adds greatly to its strength and durability. This Wire is made on an entirely different principle from any other, is amply secured by Letters Patent and no infringement upon any other Patent Right.

AMERICAN FENCING CO.,

Works: { Nos. 232, 234, 236, 238 West 29th Street. Nos. 229, 231, 233, 235, 237, 239 West 28th Street.

Office: 234 West 29th Street, New York

THE MURPHY VARNISHES,

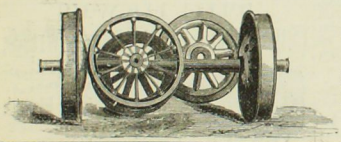


MANUFACTURED BY

MURPHY & COMPANY,

Newark, N. J., and Cleveland, O.

These Varnishes are unequaled in all the essential requisites for Railway needs. They have been before the trade for fifteen years, and by their uniform reliability and the satisfaction obtained in their use, have won a position on most of the leading roads which practically makes them the standard. Send for Descriptive Price List.



MOWRY CAR AND WHEEL WORKS,

CINCINNATI, O.

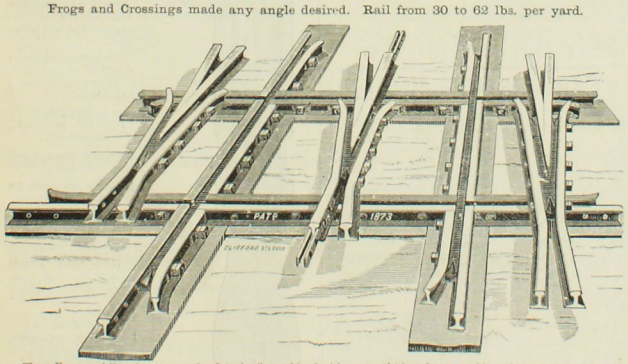
Manufacturers of Cars and CAR WHEELS of all descriptions. Wheels and Axles, Chilled Tires; Engine, Car and Bridge Castings, of any pattern, furnished to order at short notice. Wheels of all sizes constantly on hand.

OFFICE: No. 27½ W. Third St., Cincinnati, O.
WORKS: Eastern Avenue and Lewis Street.

L. A. GREEN, Sup't, Cincinnati, O.

ELLIOT'S PATENT STEEL RAIL FROGS AND CROSSINGS.

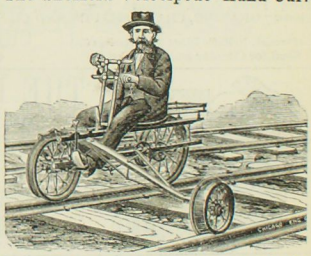
Frogs and Crossings made any angle desired. Rail from 30 to 62 lbs. per yard.



These Frogs and Crossings are made of steel rail, combined with a wrought-iron frame, and bound together transversely with strong bolts, which give it great strength and durability without destroying its elasticity. They are connected at all ends by Fish-Plate Joints, and lie on the same tie surface as the running rail without any cutting of ties, thus saving a great deal of time and labor in putting in place in track.

Manufactured by H. & H. ELLIOT, East St. Louis, Ill.

The Sheffield Velocipede Hand-Car.



This Hand-Car is especially adapted to the use of **Road-Masters, Bridge Inspectors, Telegraph Line Repairers, Track Superiors, Track Walkers, Wood** and **Tie Inspectors,** and for all work where one or two men wish to go over the line at will.

It is Light, Easily Handled, and when ready for shipment occupies very little space in Baggage Car—a great advantage to railroad men.

It runs easily, being propelled by the **ROWING MOVEMENT.** Can be run short distances at the rate of **20 Miles an hour; and will not jump the track.**

HENRY W. PEABODY & CO.,
111 STATE STREET, BOSTON,
GENERAL PURCHASING AGENTS
For Foreign Railway and Tramway Companies.

NOW READY:

CAR-BUILDER'S DICTIONARY.

500 PAGES; 800 ENGRAVINGS.

The illustrations of all kinds of American cars, their parts and attachments, are complete and exact.
Price, postage paid, $2. Ten copies, $17.50. For sale by

THE NATIONAL CAR-BUILDER.

MONEY! MONEY!

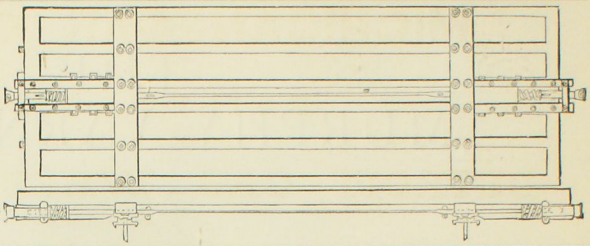
THE GREAT OPPORTUNITY OFFERED BELOW.

The CONTINUOUS DRAW-BAR COMPANY, of Cincinnati, have agreed to sell Railroad Rights of their valuable improvements, the Continuous Draw-Bar, for Passenger and Freight Cars, which is now so fast superseding the old method of pulling arrangement.

It has in the past twelve months been put upon upward of Fifty Railroads, and upon some ten thousand (10,000) cars, and is every day getting more popular.

It saves to Railroad Companies in first cost to apply it from 20 to 40 per cent and in daily running repairs at least 50 per cent. This we guarantee.

For particulars address



THE CONTINUOUS DRAW-BAR CO.,

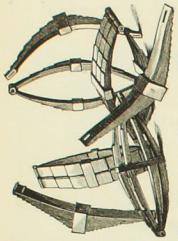
SIXTH AND HORN STS., CINCINNATI, O.

DIAMOND STATE CAR SPRING COMPANY.

JAMES P. HAYES,

WILMINGTON, DEL.,

MANUFACTURER OF



IMPROVED FLAT AND ROUND BAR

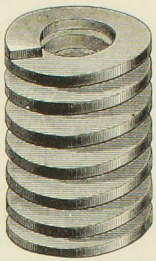
NEST SPRINGS,

Of the Best Grades of Cast Spring Steel;

ALSO

SPIRAL SPRINGS

Of Every Description.



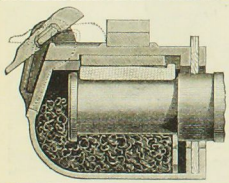
JAMES C. PICKELS, Gen. Agent.

STEEL CASTINGS

FROM 1-4 to 10,000 lbs. WEIGHT, true to pattern, sound, and solid, of unequaled strength, toughness, and durability. An invaluable substitute for forgings or cast-iron requiring three-fold strength. Gearing of all kinds, Couplers for Passenger and Freight Cars; Driving Wheels for Locomotives; Buffers, Cross-Heads, Bull Nose Bumpers for Freight, Pedestals, Journal Boxes, Brake Blocks and Shoes, Brake and Ratchet Wheels; Pivot Plates, Frogs, Crossings, Frog Points, Seat Backs, and Railroad Machinery Castings of all kinds. GEARING, CRANK-SHAFTS, AND CROSS-HEADS FOR LOCOMOTIVES, SPECIALTIES.

(Formerly McHaffie Direct Steel Castings Co.)
Send for Circular and Price-List.

CHESTER STEEL CASTINGS CO,
407 Library St., Philadelphia.—Works: Chester, Pa.



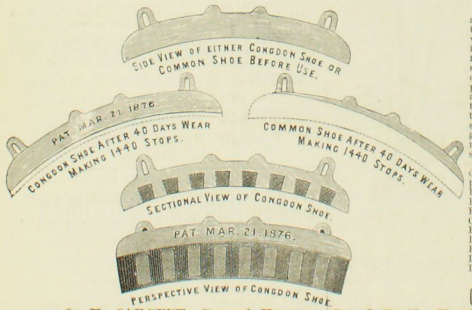
THE HEWITT BOX-LID CO.,

142 DEARBORN STREET,

CHICAGO, ILL.

We respectfully refer you to the following railroads using the Hewitt Cover: K. C., St. J. & C. B.; M. R., Ft. S. & G.; C., B. & Q.; C., A. & St. L.; A., T. & S. F.; A. & N.; K. P.; F. & P. M.; D., L. & N.; D. & B. C.; M. C.; H. & St. J.; C. & V.; St. L., I. M. & S.; B. & M. R. (in Neb.); D. P.; L., L. & G.; L. E. & W.; L. P. & C.; I. C.; O. C.; St. L., V. & T. H.; St. P. & S. C.; N. P.; C. & E. I.; M. P.

CONGDON'S IMPROVED CAR BRAKE SHOE.



This improvement consists of a shoe, having imbedded in its body of cast iron, pieces of wrought iron, steel, malleable iron, or other suitable metal, fixed therein so as to appear in sections on the wearing surface of the shoe, which increases surprisingly its resistance to wear, and adds materially to the friction or adhesion of the shoe to the surface of the wheel. These shoes are now in extensive and general use on many prominent railroads, and are effecting a saving of over fifty per cent.

Communications should be addressed to either of the following parties: THE CONGDON BRAKE SHOE CO., GRAND PACIFIC HOTEL, CHICAGO; RAMAPO WHEEL & FOUNDRY CO., RAMAPO, N. Y.; J. H. BASS, CHICAGO; BASS FOUNDRY & MACHINE WORKS, FORT WAYNE, IND.; ST. LOUIS CAR WHEEL CO., ST. LOUIS, MO.

THE
Congdon Brake Shoe Co.

G. M. SARGENT, General Manager, Grand Pacific Hotel, Chicago, Ill.

RAILWAY
MACHINERY AND SUPPLIES.

L. G. TILLOTSON & CO.,

MANUFACTURERS OF

RAILWAY CAR FINDINGS.

PLUSH IMPORTERS.

RUBBER GOODS

COTTON WASTE.

DEALERS IN

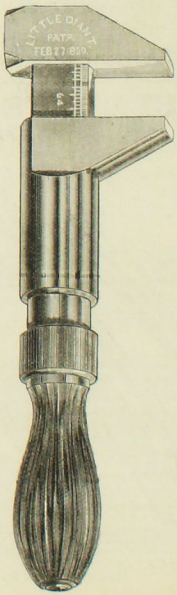
RAILWAY SUPPLIES

OF EVERY DESCRIPTION.

Nos. 5 and 7 Dey Street, New York.

THE HEWIT

Little Giant Pocket Screw Wrench,



With Caliper-Scale on Shank.

All Nickel Plated.

MADE IN BEST MANNER.

This engraving represents the full size, and is light and convenient to carry in the pocket. Always ready for use.

Every Locomotive Engineer and Mechanic should have one.

Every Counting-Room should have one. It is also convenient as a Paper Weight.

EVERY DENTIST SHOULD HAVE ONE.

Every Family will find it useful.

No one should be without it.

PRICE, $1 EACH.

A LIBERAL DISCOUNT TO THE TRADE.

Will send single wrench by mail, prepaid, on the receipt of price.

Address

"LITTLE GIANT" WRENCH MANUFACTORY,

CENTRAL BLOCK,

MARKET ST.

Chicago, Ill.

MICHIGAN CAR COMPANY,

Manufacturers of

JOHN S. NEWBERRY, President.
JAMES McMILLAN, Treas. and Manager

RAILROAD CARS,

HUGH McMILLAN, Secretary.
JAMES McGREGOR, Superintendent.

OFFICE: NO. 2 MOFFAT BLOCK, DETROIT, MICH.

DETROIT CAR WHEEL COMPANY,

Manufacturers of

Locomotive and Car Wheels, Railroad and Other Castings,

JOHN S. NEWBERRY, President.
JAMES McMILLAN, Treasurer.

DETROIT, MICH.

JAMES McMILLAN, Manager.
HUGH McMILLAN, Secretary.

BAUGH STEAM FORGE COMPANY,

Manufacturers of all Descriptions of

CAR AND DRIVING AXLES, COUPLING LINKS AND PINS, SHAFTINGS, DRAW BARS, ETC

Works on River Road, Below City,

JOHN S. NEWBERRY, President.
JAMES McMILLAN, Treasurer

DETROIT, MICH.

JOHN B. BAUGH, Manager.
HUGH McMILLAN, Secretary.

DETROIT IRON FURNACE COMPANY.

LAKE SUPERIOR CHARCOAL PIG IRON,

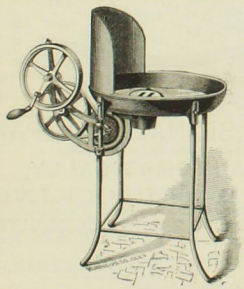
FOR CAR-WHEEL AND MALLEABLE USE.

JOHN S. NEWBERRY, President.
JAMES McMILLAN, Vice-Pres. and Treas.

DETROIT, MICH.

HUGH McMILLAN, Secretary.
LEE BURT, Manager.

WATSON'S PATENT



PORTABLE FORGE,

WITH OR WITHOUT HOOD,
Manufactured by
Cleveland Steam Gauge Co.,
CLEVELAND, O.

THOMAS TURTON & SONS,
STEEL FILE
AND
RAILWAY SPRING MANUFACTURERS
SHEFFIELD, ENGLAND,
OFFER THEIR
Cast Spring Steel,
For Immediate Delivery, at a Reduced Price.
AMERICAN OFFICE:
40 Kilby Street Boston, Mass.

ESTABLISHED BY E. & C. W. HOUGHTON IN 1826.

C. C. HOUGHTON & SONS,

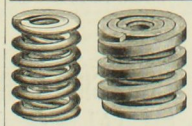
IMPORTERS AND DEALERS IN

FANCY WOODS,

In Boards, Planks and VENEERS Especially adapted for Car Work.

ESTIMATES FURNISHED ON APPLICATION.

C. C. HOUGHTON & SONS,
8 Howard Street, New York.



DETROIT CAR SPRING CO.,
MANUFACTURERS OF
ROUND AND FLAT,
BAR, NEST AND
SPIRAL SPRINGS,
FROM BEST CAST STEEL,
DETROIT, MICH.

ALEX DE LANO,
Treasurer and Manager.
H. R. NEWBERRY
Secretary.
DETROIT,
MICH.
A. H. KING,
General Eastern Sales Agent.
New York Office:
46 Cortlandt St.

NATIONAL

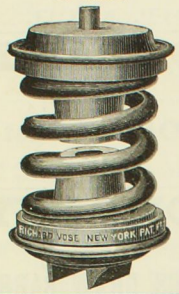
Car Spring Company,

RICHARD VOSE, President.

CHICAGO: 194 Lake St. NEW YORK: 13 Barclay St. ST. LOUIS: 714 N. 2d St.

PHILADELPHIA: 208 Walnut St.

VOSE GRADUATED EQUALIZER RUBBER CONE.



Adapted to a Car-Body Weighing 32,000 Lbs.
Diameter, outside Casting, 8 in.
Height, Bearing to Bearing, 11¼ in.

BENTLEY, GILDERSLEEVE & CO.,

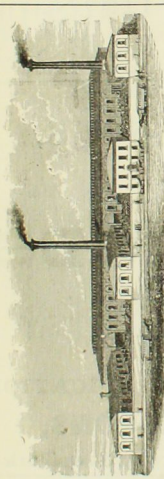
RAILROAD TIES,

CAR AND RAILROAD LUMBER,

WHITE AND YELLOW PINE AND OAK.

S. GILDERSLEEVE. E. W. VANDERBILT.

NEW YORK.



Established 1847.

A. WHITNEY & SONS,

RAILROAD WHEELS AND AXLES,

Callowhill, from 16th to 17th Sts., Philadelphia.

HARDWOOD LUMBER

AND VENEERS,

Expressly Manufactured

FOR CAR BUILDERS' USE.

Mahogany, Satinwood, French and American Walnut, Hungarian Ash, Birdseye Maple, etc., etc.
A choice assortment always to be found.
Send for Catalogue and Price List.

GEO. W. READ & CO.,
186-200 Lewis street, New York.

DAVENPORT, FAIRBAIRN & CO.,

ERIE, PA.

MANUFACTURERS OF

CAR WHEELS,

Capacity 350 Wheels per day. Wheels made by improved process. Far more durable than those made in the ordinary way

ERIE CAR WORKS (LIMITED).

ERIE, PA.

Capacity 16 Cars Per Day.

FREIGHT CARS OF BEST MATERIAL, AND CONSTRUCTION A SPECIALTY.

H. M. CLAFLIN, President, J. N. ASHBURN, Secretary. S. SHELDON, Engineer. W. REUSCHEL, Ass't Eng'r

CLEVELAND BRIDGE & CAR WORKS,

BUILDERS OF

BRIDGES AND ROOFS,

EITHER OF IRON OR WOOD. ALSO

FREIGHT AND STREET RAILWAY CARS,

WITH ALL DESIRABLE IMPROVEMENTS.

Manufacture Car Wheels and Castings of All Kinds.

OFFICE: 121 SUPERIOR STREET.

Works: Cor. Lake and Wason Sts., Cleveland, O.

JOHN R. GRAHAM,

THIRTIETH ST. AND ELEVENTH AVE., N. Y.

MAHOGANY and all other Fancy CABINET WOODS in Boards, Planks and Veneers suitable for CAR WORK.

The Flexible Shaft is now used by 30 Railroads in the U. S. and Canada.

THE·STOW·FLEXIBLE·SHAFT·CO·LIMITED·

As this shaft transmits power through any number of curves, its value in the railroad and general machine shop, is at once apparent. We have designed, and keep in stock, a series of special tools for use with the PORTABLE DRILLS for metals; AUGER CHUCKS for wood; CLAMPS for emery and buffing wheels, etc. CATALOGUE and PRICE LIST, on application.

500·NORTH·FIFTEENTH·ST·PHILADELPHIA·

The Flexible Shaft is now used by 5 Locomotive Works in the U. S.

THE UNION ELECTRIC SIGNAL COMPANY,

Owners and Manufacturers of the ONLY Practically Successful System of Operating

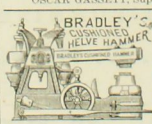
RAILROAD SIGNALS AUTOMATICALLY,

EITHER AS A

BLOCK SYSTEM or as INTERLOCKING,

or both combined, on single or double track. The principle on which this system is based admits of such simplicity in the mechanism as can not be otherwise attained. All safety appliances, such as bells announcing trains at crossings or stations, and gates with automatic movement, are furnished without any complications. The company controls the use of this system by patents of undoubted validity, and it is in daily practical operation on important railroads. Illustrated pamplets and full information furnished on application.

EDWARD CUNNINGHAM, President Home Office, No. 85 Devonshire street, Boston, Mass.
J. GARDNER SANDERSON, General Manager, Scranton, Pa. | Office: Rooms 34 and 35, Coal and Iron Exchange, Courtland street, New York.
C. H. JACKSON, General Agent, Harrisburg, Pa.
OSCAR GASSETT, Superintendent, Office and Factory, 82 Canal street, Boston, Mass.



BRADLEY'S CUSHIONED HELVE HAMMER.

Awarded first premium, Silver Medal at American Institute Fair, 1873, Cincinnati Industrial Exposition, 1874, and the Diploma of Honor and Grand Medal of Merit at the Centennial Exhibition in 1876. Being the highest award given any goods of their class in America or Europe.

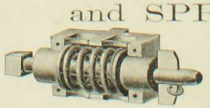
It has more good points, less complication, more adaptability, larger capacity, does more and better work, takes less power, costs less for repairs, than any hammer in the world. Guaranteed as represented.

A. B. BARNES, Western Agent, Nos. 46 and 48 West Lake Street, CHICAGO, ILL.

BRADLEY & COMPANY, (Established 1832.) SYRACUSE, N. Y.

BUTLER'S EXCELSIOR DRAW BAR ATTACHMENT

and SPRING PROTECTOR.



THE BEST AND MOST ECONOMICAL ATTACHMENT FOR DRAW BARS YET DISCOVERED.

Send for Descriptive Circulars and all Information to

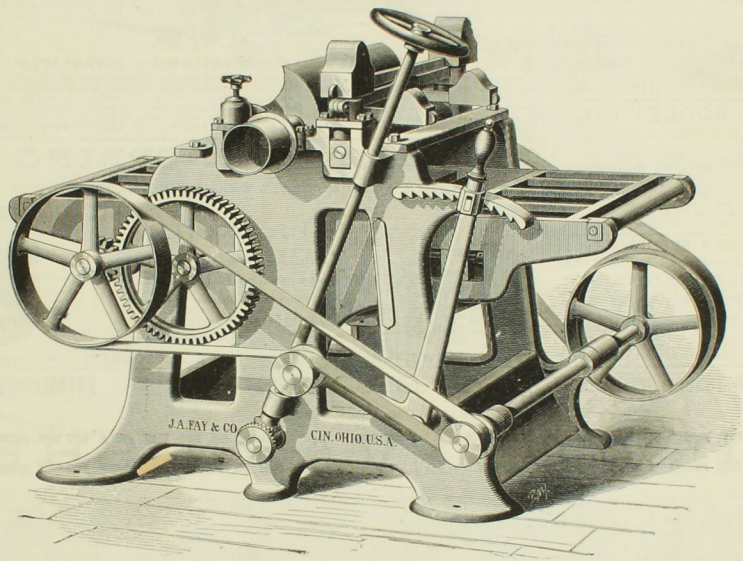
GEORGE BUTLER, Patentee and Proprietor, CINCINNATI, OHIO.

J. A. FAY & CO.,

BUILDERS OF

PATENT

Wood-Working Machinery



SPECIALLY DESIGNED FOR

Railroad, Car and Bridge Shops; Government, Arsenal and Navy Yards, etc.

EMBRACING THE FOLLOWING:

Patent Planing, Matching and Beading Machines.
Daniels and Dimension Planing Machines.
Single, Double and Triple Spindle, Vertical, Horizontal and Radial Car-Boring Machines.
Patent Vertical Double-End Tenoning Machines.
Patent Car Gaining Machines.
Car Mortising and Boring Machines.
Rotary Car Mortising and Boring Machines.
Sill and Bridge Timber Dressing Machines.
Car Shaping and Molding Machines.
Heavy Ripping and Cross-Cutting Machines.
Heavy Circular and Band Re-Sawing Machines, etc., etc.

ACKNOWLEDGED SUPERIOR TO ALL OTHERS IN

1. Originality of Design.
2. Simplicity of Construction.
3. Perfection in Workmanship.
4. Reduction of Labor.
5. Increase in Production.
6. Efficiency and Durability.

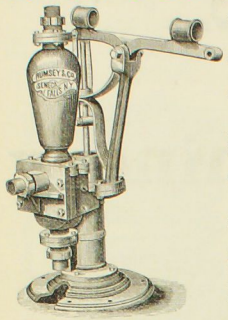
We have the honor to refer to a few of the many Railroad, Car and other large shops to which we have supplied our labor-saving machinery:

Barney & Smith Manufacturing Co.
Michigan Car Co.
Ohio Falls Car Co.
Beaver Falls Car Co.
St. Charles Car Manufacturing Co.
Pullman Palace Car Co.
Allegheny Car Co
Missouri Car and Foundry Co.
Wason Car Co.
Ontario Car Co.
United States Rolling Stock Co.
Chas. A. Whitney & Co.
Pennsylvania Central R. R. Co.
Baltimore & Ohio R. R. Co.
Union Pacific R. R.
Ohio & Mississippi R. R.
Boston and Albany R. R.
Cleveland, C., C. & I. R. R.
Atchison, Topeka & Santa Fe R. R.
Missouri, Kansas & Texas R. R.
International & Gt. Northern R. R.
Columbus & Hocking Valley R. R.
Lake Shore & Mich. Southern R. R.
N. Y. Central & Hudson River R. R.
St. Louis, Iron M't'n & South'n R.R.
Memphis & Little Rock R. R.
Illinois Central R. R.
D. D. E. B. & B. R. R. Co.
Texas & Pacific R. R.
Terre Haute & Indianapolis R. R.
Burlington & Missouri River R. R.
Grand Trunk R. R.
Allegheny Valley R. R.
Selma, Rome & Dalton R. R.
Evansville & Terre Haute R. R.
Chicago & Alton R. R.

Catalogues, Photographs and Estimates furnished on application.

W. H. DOANE, President. D. L. LYON, Secretary.

RUMSEY & CO. (Limited.),



Seneca Falls, NEW YORK,

Manufacturers of

OVER 800 DIFFERENT STYLES OF PUMPS.

More than 50 Railway Companies have them in use.

ALSO

FIRE ENGINES, ETC., ETC.

ASK FOR

RUMSEY'S PUMPS

and address for Catalogue and full information.

RUMSEY & CO., SENECA FALLS, New York.

LANE & BODLEY CO.,

CINCINNATI,

MANUFACTURERS OF

GRADUATED STROKE POWER

MORTISING AND BORING MACHINES,

Railway Cut-off Saws, Traveling Bed Planers, Shafting, Hangers, Pulleys and Couplings, Stationary, Portable, Hoisting and Pile-Driving Steam Engines, all of the best Design, Material and Workmanship. Correspondence solicited.

LANE & BODLEY CO.,
John and Water Streets, Cincinnati.

CAR GLASS A SPECIALTY,

"Schanck's" Glass Depot.—Founded 1837.

THEO. W. MORRIS & COMPANY,

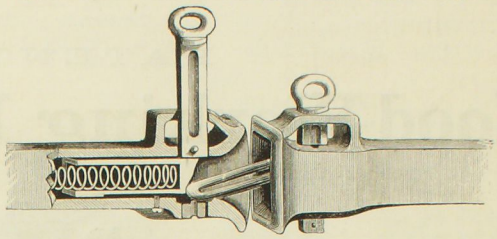
Importers of Plate and Sheet Glass.

27 CHAMBERS AND 3 READE STS., NEW YORK.
112 WEST 2D ST., CINN., O.

Thin Plate; Crystal Sheet, thick and flat; Embossed Work for Coaches and Sleepers; Deck Lights; Signal Colors; and all Glass required in R.R. Construction.

PENNSYLVANIA SELF CAR-COUPLER.

Made of Chester Steel Casting Co.'s Cast-Steel. Three Times the Strength of Cast Iron. Light and Durable. An Indestructible Draw-Bar. A Sure Self-Coupler.

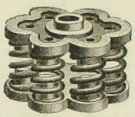


THIS COUPLER HAS THE FOLLOWING ADVANTAGES:

It is light. The freight on the additional weight of a Cast-Iron Draw-Bar, of equal strength, would amount in the lifetime of a car to four times the cost of the Steel Bar. The Pins cannot be lost or easily broken; they are fast to the arch. It has all the features of the common Draw-Bar; the same Link and Pin. It will readily couple with cars having other Draw-Bars, and of various heights. It is a sure Self-Coupler. No man need get crushed or injured in coupling. To prevent the car coupling, raise the Pin and turn it sideways so that the bottom rests on the side of the upper hole. Address orders to **E. P. DWIGHT, 407 Library Street, Philadelphia.**

COLUMBIA CAR-SPRING CO.

322 SEVENTH AVENUE, CORNER TWENTY-EIGHTH STREET, NEW YORK.



BRANCHES:

36 Dearborn Street, Chicago, Ill.
109 N. Third Street, St. Louis, Mo.
109 Milk Street, Boston.
123 Central Avenue, Cincinnati.
209 S. Third Street, Philadelphia.

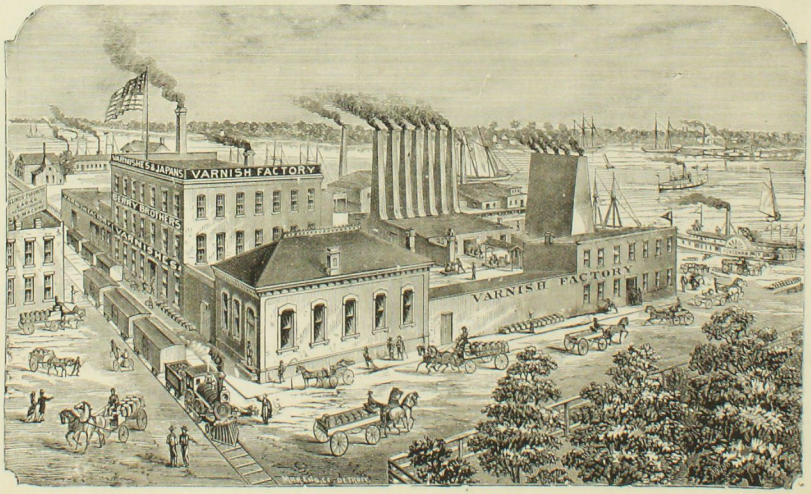
F. H. ANDREWS, President and Treasurer. **B. A. CLOONEY,** Sec. and Gen'l Superintendent.

ESTABLISHED IN 1858. **BERRY BROTHERS,** ESTABLISHED IN 1858.

MANUFACTURERS OF

RAILWAY VARNISHES.

USE BERRY BROTHERS' RAILWAY VARNISHES.



USE BERRY BROTHERS' RAILWAY VARNISHES.

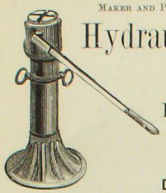
Frontage on Wight Street, 218 ft. **DETROIT, MICH.** Frontage on Lieb Street 200 ft

B. R. MILLER, General Eastern Agent, 279 BROADWAY, NEW YORK.

RICHARD DUDGEON,

No. 24 Columbia St., New York.

MAKER AND PATENTEE OF IMPROVED



Hydraulic Jacks,

PUNCHES,

Boiler-Tube Expanders,

AND

DIRECT ACTING

STEAM HAMMERS.

JACKS FOR PRESSING ON CAR-WHEELS OR CRANK-PINS MADE TO ORDER.

Communications by letter will receive prompt attention.

French's Celebrated Plumbago Oils.

The only Oils which will hold Plumbago in absolute suspension in any climate and for any length of time.

The Most Perfect Lubricators known for Railroad Car Journals, Heavy Bearings, Fast-Running Machinery, Cylinders, etc.

These Oils have been thoroughly tested in comparison with a number of the best known lubricants, by **Prof. R. H. Thurston,** in charge of the Department of Engineering, Stevens Institute of Technology, Hoboken, N. J. Prof. Thurston reports that, gallon for gallon, **French's Plumbago Oil,** for railroad service,

Is worth 4.82 times as much as			**Sperm Oil.**
"	12.33	"	" **Lard Oil.**
"	9.25	"	" **W. Va. Oil.**
"	15.51	"	" **Ordinary Reduced Black Oil.**

With the further advantage to our Plumbago Oils of little tendency to gum, and **entire freeness from Acid.**

EXTRACT FROM REPORT OF PROF. THURSTON.

* * * * *

THE "FRENCH'S PLUMBAGO OILS" *thus appear to possess those much-sought-for qualifications which are practically necessary to the complete realization of the great advantages in lubricating and cooling, possessed by Plumbago as a lubricant.* Very respectfully, R. H. THURSTON.

The following are a few out of hundreds of practical tests with our oils:

H. WAITKEYS, SUPT. MOTIVE POWER, N. Y. C. & H. R. R., Western Division, *RAN THE TENDER OF ENGINE 189 (FAST PASSENGER) THREE AND A HALF MONTHS*, 150 miles per day, or *ABOUT 15,000 MILES, WITH ONE OILING WITH OUR PLUMBAGO COACH OIL*, and states that it would have run longer, but engine was stopped to put under new wheels.

PASSENGER CAR 130 ON THE N. Y. C. & H. R. R. RAN 23,040 MILES WITH ONLY ONE OILING WITH OUR PLUMBAGO COACH OIL, AND NO OTHER OIL USED.

WAGNER SLEEPING-CAR NO. 40 ON SAME ROAD, RAN 15,000 MILES WITH ONLY ONE OILING OF SAME, AND NO OTHER OIL USED.

WAGNER DRAWING-ROOM CARS "CITY OF ROME" AND "CATSKILL" RAN ON N. Y. C. & H. R. R. EACH 10,000 MILES WITH ONE OILING.

N. E. CHAPMAN, MASTER MACHINIST, CLEVE. & PITTS. R. R., CERTIFIES THAT HE RAN COACH NO. 37 ON THAT ROAD 33,470 MILES WITH ONE OILING OF OUR COACH OIL.

W. F. TURREFF, MASTER MECHANIC, CLEVE., TUSCARAWAS VALLEY & WHEELING R. R., CERTIFIES THAT COACH NO. 8 RAN ON THAT ROAD 24,400 MILES WITH ONE OILING OF OUR PLUMBAGO COACH OIL.

THE PLUMBAGO OIL CO.,

P. O. Box No. 8, Rochester, N. Y.

Send for Circular and Report of Prof. Thurston.

S. D. McMILLAN, President, Cleveland, O.
C. T. HAM, Vice-President, Rochester, N. Y.

INDUCEMENT TO CLUBS.

One copy of the CAR-BUILDER will be sent free for one year, for every five new subscribers to one place or address.

VAN LIEW'S GRAIN DOOR PATENTS,

Viz.: "Self-Operating," "Nail-Proof," "Socket," and Bissell & Miller Patents.

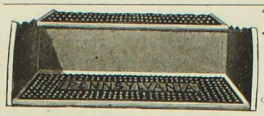
1. Self-supporting, and carried where needed.
2. Very easily operated, and always in place.
3. Two fingers will take down and Lock for use.
4. One hand will raise it, and hang it up again.
5. Always secured, and "cannot be stolen or lost."
6. Safely locked, and "cannot lose grain."
7. Adapted to any sized Door, in any Railroad Car.
8. "Always in Order," and "Cars ever ready for use."
9. Now Improved, Simplified and Complete.

D. F. VAN LIEW Patentee,

(P. O. Box 172.) Aurora, Illinois.

REFERENCES:

C. & N. W.—C., A. & St. L. | Wab., St. L. & P.—Kas. Pac. | M., K. & T.—K. C., St. J. & C. B. | Grand Trunk—L. E. & W., etc.
Mo. Pac.—P. Ft. W. & C. | Union Line—P. C. & St. L. | K. C., F. S. & G.—A. T. & S. F.



RUBBER PLATES FOR CAR STEPS,

MANUFACTURED BY

Rubber Step Manufacturing Co., 43 Haverhill St., Boston.

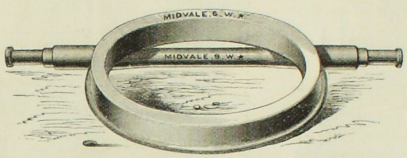
Accidents from slipping prevented; icy steps avoided. The elasticity of the rubber breaks the ice when stepped upon.

SEND FOR CIRCULAR.

MIDVALE STEEL WORKS.

Works and Office: NICETOWN, PHILADELPHIA, PA.

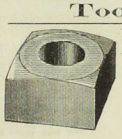
TIRES, LOCOMOTIVE & CAR WHEEL.



AXLES OF Every Description.

HEAVY CASTINGS AND FORGINGS.

Tool-Machinery and Spring Steel.

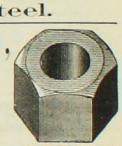


HOOPES & TOWNSEND,

1330 BUTTONWOOD STREET,

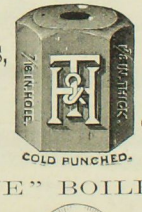
Philadelphia, Pa.,

MANUFACTURE



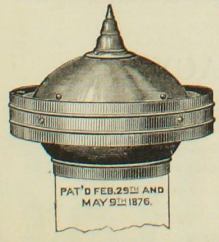
MACHINE, CAR, AND BRIDGE BOLTS,

SQUARE AND HEXAGON NUTS, WASHERS, TANK AND COOPERS' RIVETS,



TAP BOLTS, WOOD SCREWS, SWIVELS, RAILROAD TRACK BOLTS, CAR FORGINGS,

"KEYSTONE" BOILER RIVETS



SIMPLE, DURABLE AND CHEAP.

GLOBE VENTILATORS,

For Ventilation of Cars, Depots, Round-Houses AND WATER CLOSETS.

Twenty-five Sizes, from 2 in. to 48 in. inclusive.

GLOBE DEFLECTORS,

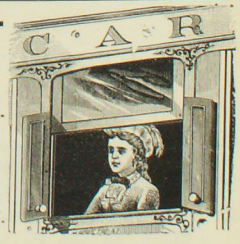
FOR PREVENTING DUST OR CINDERS FROM ENTERING CARS.

MANUFACTURED BY THE

GLOBE VENTILATOR COMPANY,

203 River Street, TROY, N. Y.

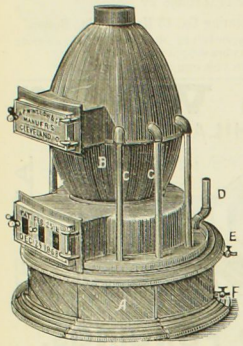
Catalogue and Price-List Furnished on Application.



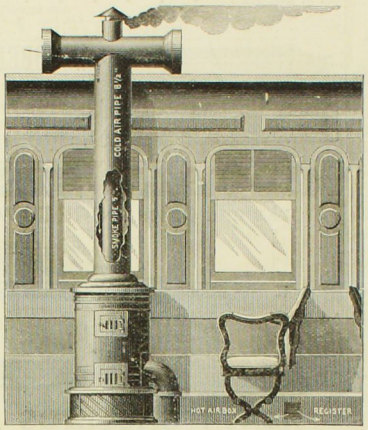
WINSLOW'S SAFETY CAR STOVE,

MANUFACTURED BY

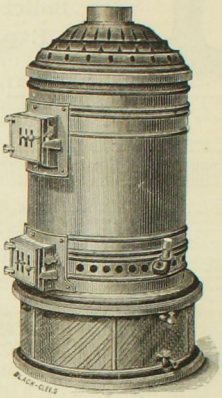
A. P. WINSLOW & CO., 89 Seneca St., Cleveland, Ohio.



No. 1.



No. 3.



No. 2.

No. 1.—Stove without Jacket. Letter A.—Copper Tank containing 16 gallons of Water, and will immediately extinguish the fire when the car is overturned. Letter B.—Fire Pot. Letter CC.—Pipes leading from Tank into Fire Pot. Letter D.—Feed Pipe. Letter E.—Try Cock. Letter F.—Discharge Cock to empty Tank when required.

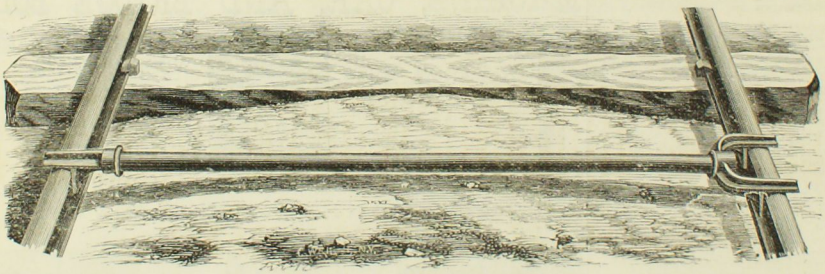
No. 2.—Stove as set up in car, and will burn either hard or soft coal or coke.

No. 3.—Designed for conducting hot air along the sides of the car, distributing same by means of the registers equally throughout the entire car, changing the air every three to five minutes, forcing the impure air out at the top of car—thus *heating* and *ventilating* the car perfectly.

It has proved a great success as a heater, on account of the very large volume of air heated.

It also fills the great desideratum so long sought for, *perfect ventilation* during the summer by discharging a constant stream of cold air through the registers, keeping car free from dust and cinders.

THE HUNTINGTON TRACK-GAUGE



s made with 1¼-in. iron pipes screwed with a tapered thread into malleable-iron heads, and is modeled so as to secure in a high degree the advantage of

STRENGTH, LIGHTNESS AND ACCURACY.

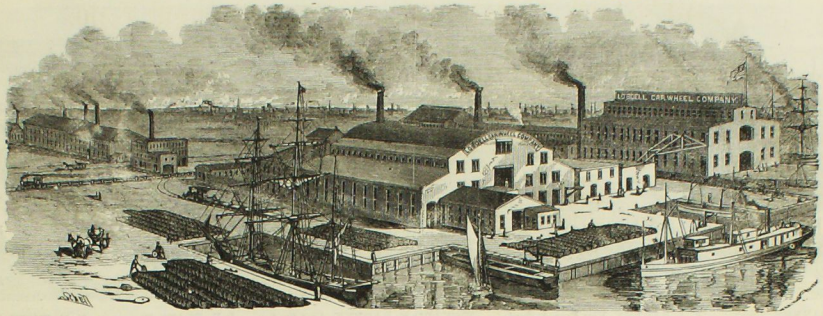
The forked end, which has two lugs which bear against the rail, secures a perfect gauge, even in the hands of a careless section-man, as it requires no judgment or correct eye to place the gauge exactly perpendicular to the rail, and it is also an important feature of this implement that even if it be swung as much as six inches out of perpendicular, it will not cause a variation in the gauge of more than one-thirty-second of an inch, whereas it is easy (and not uncommon) in using an ordinary gauge, to place it so carelessly as to cause a variation of from one-half inch to one inch.

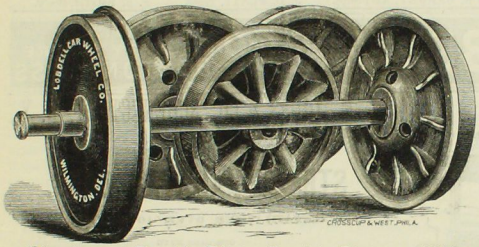
The Huntington Track-Gauge patent is owned by W. H. Boardman, John N. Reynolds and the undersigned, and from either of them gauges and any further information may be obtained.

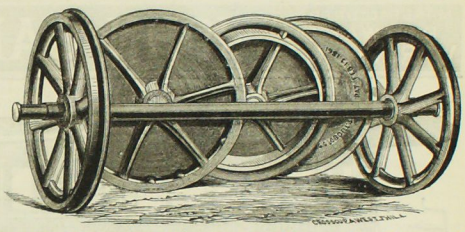
R. M. VAN ARSDALE, 5 Dey St., New York.

LOBDELL CAR-WHEEL COMPANY,

WILMINGTON, DELAWARE.







Single and Double Plate, Double Plate and Wrought Spoke, and Hollow Spoke Wheels for City and Steam Roads. Wheels with turned treads, under Patent of W. W. Lobdell, guaranteed to give greatly increased mileage over ordinary Chilled Wheels. Geo. G. Lobdell, *Pres't.* W. W. Lobdell, *Sec'y.* P. N. Brennan, *Treas.*

SAMUEL HARLAN, Jr., Pres't. J. T. GAUSE, Vice-Pres't. T. B. SMITH, Sec'y and Treas.

THE

HARLAN & HOLLINGSWORTH COMPANY,

WILMINGTON, DEL.

ESTABLISHED IN 1836.

MANUFACTURERS OF EVERY DESCRIPTION OF

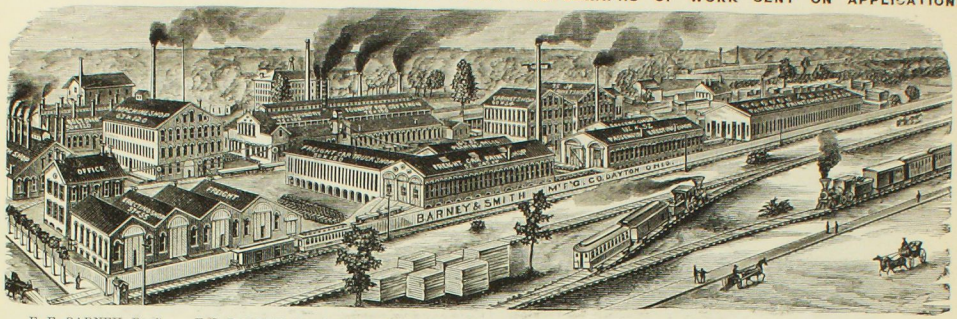
RAILROAD CARS.

BARNEY & SMITH MANUFACTURING CO.,

MANUFACTURERS OF ROLLING STOCK FOR RAILROADS, FROGS, CAR WHEELS.

Capital Stock, $750,000. Grounds Occupied, 18 Acres. 10 Passenger and Baggage per Month. EMPLOY 1,000 MEN.
Capacity, 15 Freight Cars and 100 Car Wheels per Day. AND ALL KINDS OF CASTINGS. Six Million Feet Lumber in Store.

SPECIAL ATTENTION GIVEN TO NARROW-GAUGE WORK—PHOTOGRAPHS OF WORK SENT ON APPLICATION.



E. E. BARNEY, Pres't. E. J. BARNEY, Vice Pres. & Supt. EDWARD E. BARNEY, Ass't Supt. J. D. PLATT, Treas. F. E. SMITH, Sec'y.

MANUFACTURERS OF RAILWAY CAR VARNISHES **JOHN BABCOCK & Co** NO. 2 LIBERTY SQUARE BOSTON, MASS

J. M. JONES & CO., SCHENECTADY, N. Y.,

MANUFACTURERS OF

STREET RAILWAY CARS.

ESTABLISHED OVER 10 YEARS.

OUR CARS HAVE

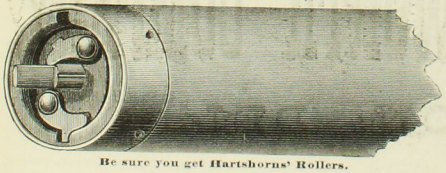
ALL LATE and VALUABLE IMPROVEMENTS,

Are noted for Light Running and Easy Riding, Combining Lightness and Strength with Beauty in Design and Finish. Our Large Facilities enable us to Fill Orders Quickly, and at the Lowest Prices for Superior Quality.

HARTSHORN'S SELF-ACTING SHADE ROLLERS.

SOLD ALL OVER THE WORLD.

This cut shows the Roller end with the pawls attached as it appears when not in motion.



Be sure you get Hartshorns' Rollers.

SPECIALLY ADAPTED TO

Railway Cars and Road Carriages.

Carry Shades of any Size or Weight. Do not get out of order.

ALL ROLLERS WARRANTED.

USED ON MANY OF THE PRINCIPAL RAILROADS THROUGH THE COUNTRY. MODELS AND CIRCULARS FREE.

S. HARTSHORN, 486 Broadway, N.Y.

A. T. STEWART & CO.,

MANUFACTURERS AND IMPORTERS OF

PLUSHES, BLANKETS,

CURTAIN MATERIALS, Etc.,

IN GREAT VARIETY, FOR

SLEEPING, PARLOR and DAY COACHES, at LOWEST MARKET VALUES.

BROADWAY, FOURTH AVENUE, NINTH AND TENTH STREETS, NEW YORK.

JOHN T. LEWIS & BROS', WARRANTED PURE WHITE LEAD, PHILADA.

TRADE MARK.

JOHN T. LEWIS & BROS.,

No. 231 South Front St.,

PHILADELPHIA,

MANUFACTURERS OF

WHITE LEAD, RED LEAD,

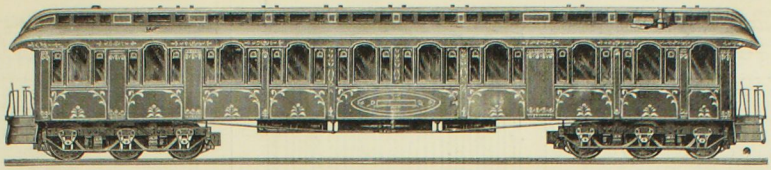
LITHARGE

ORANGE MINERAL,

Linseed Oil,

AND PAINTERS' COLORS.

THE NATIONAL CAR-BUILDER.



DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XI. } NUMBER 10. { OCTOBER, 1880. { SINGLE NUMBERS, TEN CENTS $1.00 PER ANNUM.

The Train-Boys.

ANNUAL MEETING OF THEIR ASSOCIATION AND ALLIED ORGANIZATIONS.

[From the Chicago Tribune.]

Delegations from the National American Railroad Eating-House Union, Mutual Wayside Coffee and Doughnut Company, Train-Boys' Dime Novel and Moral Suasion Society of New York, Southern Consolidated Train-Boy and Banana Merchants' Union, Northwestern Inter-State Train-Boy and Book-Peddlers' Association, and the Omaha and San Francisco Train-Boy and Prize-Package Guild, Limited, arrived in this city yesterday morning at 6 o'clock on special baggage trains, and met in general convention at Farwell Hall for the purpose of discussing their common interests, secure if possible better protection against the wearisome annoyances inflicted upon them by the traveling public, and take such steps as might be necessary to prevent innocent members of the professson from being led astray and sometimes swindled by rural tourists.

The Convention was opened at 10 a. m. By acclamation, Mr. Edouard Obrienne, ex-President of the Illinois Pop-Corn and Peanut Exchange, was called to the chair.

The Chairman made a brief address, eulogizing the profession and its glorious possibilities. America, he said, was a land of travel. It was peopled by a race that never stood still. Look at the map of one hundred years ago, unstriped by a single railroad, and with but a ragged fringe of names along the Atlantic coast to mark the centres of habitation. The middle and west were great barren wastes of yellow, blue, or red, according to the taste of the man that got the geography book up, without even a freckle to break the monotony. In those dark days the train-boy was unknown. Now look at the map. The whole country is so speckled, blotched, and fly-specked with cities and towns that in most places the eruption seems to be confluent, while between every separate and individual place there is a black line that stands for a railroad. The knowledge of the fact that on every one of these roads trains run constantly, and that upon each train is a train-boy, and at each staton one eating-house, at least, will point at once to the vast progress the country has made. The train-boy is the natural centre of railroad interest. To him the railroad companies look for influence and social standing, and to him the passengers turn for comfort, and bananas, figs and information. He has a high and noble mission. Not only is his the guardianship of a large and enterprising corporation, but on him devolves the cultivation of a public taste for literature and pop-corn. He unfolds to the Granger the beautiful but uncertain mystery of the prize-package, and educates him gradually up to appreciation of the jerk-water cigar and the centenary orange. [Applause.] It is his duty to keep the passengers continually awake lest an accident should find them asleep, and he does it. He disseminates knowledge, small change, and fruit with equal zeal and discretion. [Cheers.]

To enlarge upon the glories and usefulness of the eating-house, he said, was useless. There are but few Americans who do not travel by rail, and he would venture to say that of the millions who do there is not one who does not remember with tears in his eyes how he has been cared for and taken in at one or more hundred railroad eating-houses. [Enthusiastic applause.] He warmly welcomed the Conventon to Chicago. There is no place in the world where the train-boy is so well understood or the eating-house so much spoken of. He heard a gentleman say that morning that during a one year's stay at the Palmer House he had never been served up such meals as he had eaten at the railroad eating-houses at Bloomington, Toledo, or Cambridge City, Ind. [Frantic applause.]

Various committees were now appointed, to report in the evening. The Convention then adjourned until 8 p. m.

At 8 o'clock sharp last evening the gavel of Mr. Obrienne called the Convention to order.

The Committee on Pledges and Perquisites submitted their report. In the opinion of the Chairman, the Convention should address a memorial to Congress petitioning the passage of a bill abrogating the usurped right of petty juries to dictate to members of the profession the manner in which they should break a $20 bill for a customer. Such was the intolerance now existing along certain roads that no train-boy could accommodate a farmer with small change without incurring the risk of getting into trouble at the next station. The minority report was that a more perfect method of obtaining bail should be devised, as the interests of some of the members suffered severely from the present defective system. Adopted.

The report of the Committee on Literature, Mr. H. Hildreth, Chairman, was then read. The Committee, while congratulating the members of the various delegations upon the fact that, as a rule, the literature sold by them was quite up to the standard adopted by the Convention held in New York in 1867, regretted that upon some roads the illustrated weeklies were not supplied as they should be, and that the department of frontier fiction seemed to be deteriorating in power to excite. Recognizing the fact that the morals of the traveling public need a mild but searching corrective, the Committee recommend that the utmost encouragment be given the pictorial line, which best exposes the pernicious revels of sin. The works of Reynolds, Zola, Mrs. Southworth, and Ouida were also efficacious and deserving of push.

The Hon. Carter H. Harrison submitted herewith a minority report, announcing that he had 10,000 copies of the Chicago *Alliance*, of the June issue of 1880, beautifully illustrated, which he would let the members of the Convention have at 10 per cent below cost. To uplift the mind and inspire public enthusiasm, he had never seen anything to equal that edition, and he trusted they would circulate it from the Penobscot to the Oregon, and thence to the Withlacoochee.

The report was adopted.

The report of the Committee on Sandwiches and Pie was of exceeding interest. Mr. Jones, the Chairman, reported that since he had been appointed Deputy Purveyor of Fillings only the best steaks, cut right from the neck, had been used, and that the economy of spreading pure tallow instead of butter on the bread had been clearly made manifest. He considered that in certain respects the railroad sandwich as now constructed was imapproachable.

The Chairman of the Second Section, Fourth Subdivision, of the Lower Sub-Committee on Pie, reported adversely to the proposed introduction of real currants in the mince-meat, in place of flies, as being unwarrantable extravagance. Since the introduction of flies, in 1872, the profit on mince-pies had been increased 40 per cent. Besides as a large number of persons afflicted with heart disease, and to whom a sudden surprise is often fatal, travel daily on the cars, and are pie-consumers, the absence of the customary fly and the presence of the infrequent currant would be conducive of evil. He also advocated the admixture of a larger quantity of sawdust and shorts with the pumpkin in making the New England variety. The report was adopted with cheers.

A communication from Mr. Phineas Banning of Los Angeles, Cal., offering 10,000 gross of dried figs of the crop of 1841 in boxes, with bottoms two inches thick, holding three figs each, at six and a half cents a gross, was read and referred to the Chairman of the Dried-Fruit and Shaving-Soap Committee, with recommendation to accept at once.

Mr. Marsh, Chairman, submitted the report of the Executive Committee of the Eating-House Division. In their opinion, the criminal negligence of conductors in delaying a train twenty-five minutes for dinner instead of thirteen was to be severely censured as grossly prejudicial to the interests of members. Sealed proposals for eggs of the spring lay of 1869 had been received. One firm in Indiana offering 20,000 dozen at one cent and two mills per gross, transportation and disinfection of cars to be furnished and paid by purchasers, was successful in obtaining the contract. A St. Louis firm had been awarded the contract for chicory and parched beans for coffee. The Goodyear Company, as usual, would supply rubber steaks at the old rates.

Mr. Daniels, Chairman of the Committee on Cigars, reported progress. Extreme difficulty had been experienced in obtaining good cabbage-leaf this season by manufacturers, and the butt and old-sojer collectors who supply fillings had recently struck for higher wages. In consequence of this, 10-cent cigars could not be delivered to train-boys and eating-houses much under 18 cents per 100. The contractors, however, hoped soo to be able to offer better terms.

Mr. Smith, Chairman of the Committee on Prize-Packages, reported adversely to the proposition to enclose a nickel in every millionth package. The faith of the Granger on a still hunt for a prize was sufficiently strong, he thought, to keep the industry afloat for years yet, and the proposed expenditure was wasteful. He thought, however, that counterfeit Confederate money might occasionally be used. It might be cheaply obtained by writing to his friend Davis.

The Chairman of the Committee on Grievances recommended immediate action against such railroads as compel train-boys to brake at way stations, and serve ice-water gratuitously to passengers. Gratuitous serving of anything vitiated the taste of the traveling public, and was a violent injury to the profession.

The reports above given were received and adopted.

The Hon. Carter H. Harrison being loudly called for, took the stand and addressed the Convention. It was a great and a pleasant surprise to him to be called upon, and, although as a rule he was averse to public speaking and avoided it whenever he could, yet on this occasion, in the fullness of his heart, he would bid them welwome. [Cheers.] Although not a professional politician himself, he trusted they took a kindly interest in the coming election, and would vote the winning ticket. [Cries of "You betcher!" "Whoop!" etc.] He would be glad to see any of them at his office. In his opinion there were no proffessions so glorious as those of train-boy and eating-house keeper, and he did not know but that he would study for the practice of one of them on going out of office, unless his country needed him. [Wild and prolonged cheering.] There was no need to tell him they were all Democrats, for their habits, manner, moral tone and customs were sufficient guarantee. [Loud and continued applause.] He never was prouder in his life than standing before that meeting of train-boys and eating-house men—so congenial—so mutually—er—in short, he felt himself to be one of them. [Tumultuous approbation.] He would be pleased to give them a reception to-morrow, and hoped they would march in a body to the City Hall, and there be presented to his dear friend, Apple Mary.

His Honor was followed by Messrs. John Parmelee in a lecture on "What I Know About Trunks;" Robby Bruce on "Ward Politics, from the Standpoint of a Novice;" and Jim McHale on "Moral Suasion in the Second Ward."

Prof. E. R. Paige then read a brief essay on "The Preservation of the Banana." By careful experiment he had found that by injecting Japanese cement in the stuffing, and painting the outside skin with chrome yellow, the natural appearance of this favorite fruit could be preserved eleven years.

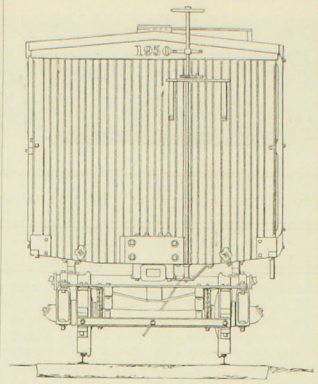
At 10 p. m. the Convention went into deliberawith closed doors, and at 10.45 adjourned.

Some New Wagner Sleeping Coaches.

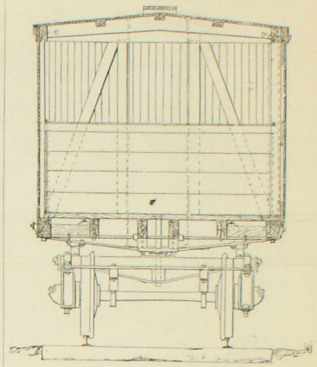
The Gilbert & Bush Company, Troy, N. Y., are building 16 large Wagner sleeping coaches of a very superior style of construction, to run on the New York Central & Hudson River road. Eight of them are already completed and in service, and the remainder are in progress and will be ready for the track at an early day.

Railway cars of this class have been brought to such a degree of perfection with respect to mechanical construction, skillful workmanship and luxurious fitting up, that any detailed description of new work in this line must necessarily be a repetition to some extent of what has been said before. We have only seen one of the cars above referred to, which may be taken as a sample of the others. It is so complete in every way as to leave little or no margin for further improvement. Its entire length, exclusive of platforms, is 69 ft. 5 in. At one end, and occupying a little more than one-third of the length of the car, are a state room, smoking room, ladies' saloon, locker and heater, and at the other end a lavatory and saloon for gentlemen, occupying a much smaller space. In the intermediate space are 12 sleeping sections, and there is also another in the state room. The upper berth frames work with weighted chains, and also have spring beds for the mattresses. The entire finish of the interior is in solid mahogany, relieved with inlay work upon the section panels. The ceilings are decorated oak, and the seats are upholstered in scarlet plush. There are two windows to each section with spring-roller curtains; and also projecting dust-guards on the outside to intercept cinders. These guards are placed vertically on each side of the windows, and work with a hinge and spring catch, so each can be set alternately at a right angle with the car side, according to the direction in which the train is moving. Hitchcock lamps are used for lighting, and the hot-water pipes from the Baker heater run under each of the seats. There are small portable tables provided for each section, in case they are wanted for lunches, card-playing, and the like. Howard's nickel-plate curtain rods, brackets, etc., add to the effect of the interior fitting. As an example of the many little conveniences that are being added to the comforts and luxuries of railway travel, we noticed in the gentlemen's lavatory an elegant nickel-plated receptacle for collars and cuffs, attached to the lower end of the mirror frame. There are the usual supply and exhaust ventilators, and also some of the latter placed in the roof and working with the wind. They may be opened, closed or regulated from the inside.

The cars have 6-wheel trucks, with Allen paper 33-inch wheels, Miller platforms and couplers and Westinghouse automatic brakes. Altogether these beautiful coaches embody about all the luxuries consistent with railway traveling. What their average weight is we do not know, but considering their great length, it must be somewhat ponderous. The average proportion of paying weight hauled, as compared with the non-paying weight, must be something almost frightful to contemplate as it affects railway economy. But unfortunately no skill or cunning of builders can abate the evil without curtailing the luxuries, and these the traveling public will not consent to forego.



End View, showing Brake Connections.



Cross Section—Truck without Brake.

THE drawings illustrate the construction of the Standard Freight Box Car of the New York, New Haven & Hartford Railroad Company. These cars are built at the Hartford shops of the company, and under the supervision of Mr. L. Packard, the Master Car-Builder of the road. The principal specifications are as follows:

GENERAL DIMENSIONS.

Total length of frame	30 ft.	9 in.
Total length of body	30	0
Total width of body	8	6
Width of door opening	4	10

BODY TIMBERS.

Side sills	5 x 8 in.	x 30 ft.			South. pine.
Center stringers	4 x 8	x 30			"
Intermediate stringers	4 x 8	x 30			"
Side plates	3 x 5½	x 30			"
Center ridge	2½ x 4	x 30			Spruce.
Intermediate purlins	2 x 4	x 30			"
End sills	4½ x 11	x 8			Wh. oak.
Cross beams	3 x 8½	x 8	6 in.		"
Draught timbers	4 x 9	x 6			"
Buffer blocks	4½ x 11	x 2	4		"
End plates	2½ x 11	x 8			"
Carlins	2 x 10	x 8			"
Corner posts	4¾ x 4¾	x 7	3		"
Door posts	3¾ x 4¾	x 7	3		"
Side posts	2 x 4	x 6	6		"
Side braces	2 x 4	x 7	3		"
End braces	2 x 4	x 7	3		"
End posts	2 x 4	x 6	6		"
Blocks for saddles	4 x 6⅞	x	15⅝		"
Blocks for king bolts	4 x 6⅞	x	9		"
Top door truck	3¼ x 6	x 10	6		South. pine.
Ladders	2 x 3	x 7	6		
Flooring	1⅝ x 8 ft. 6 in.				South. pine, matched.

TRUCK TIMBERS.

Truck bolsters	5 x 12 in.	x 7 ft.	0 in.		Wh. oak.
Brake bars	4 x 6	x 5	6		"
Safety beam	3 x 9	x 7	6		South. pine.
Truss block	5 x 6	x	12		Wh. oak.

COVERING AND LINING.

Siding	1 x 4 in.	x 7 ft.	3½ in.		Wh. pine.
Door Siding	1 x 4	x 6	8		"
Top door rails	1 x 10	x 5	6		"
Middle rails	1 x 10	x 5	6		"
Bottom rails	1 x 10	x 5	6		"
Side lining	1 x 8	x 12	6		Spruce
End lining	1 x 8	x 8			"

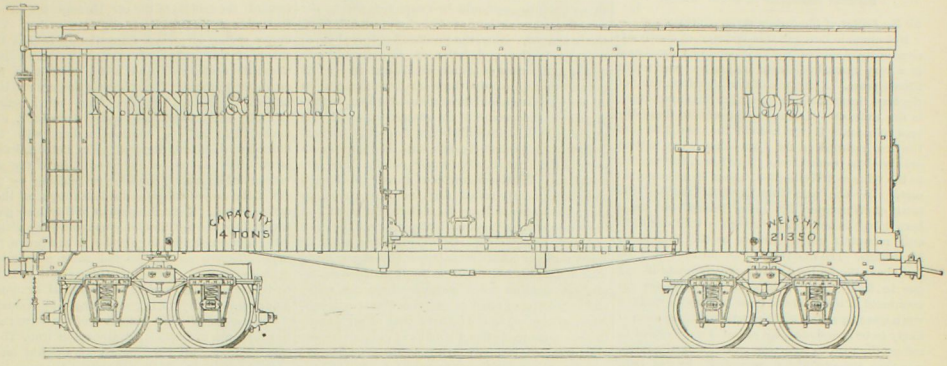
CORNICE.

Side fascia	1 x 6½ in.	x 8 ft.			Wh. pine.
Side fascia	1 x 6½	x 13			"
End fascia	1 x 12	x 9			"
Side crown molding	1 x 3½	x 8			"
Crown molding	1 x 3½	x 13			"
End crown molding	1 x 3½	x 5			"

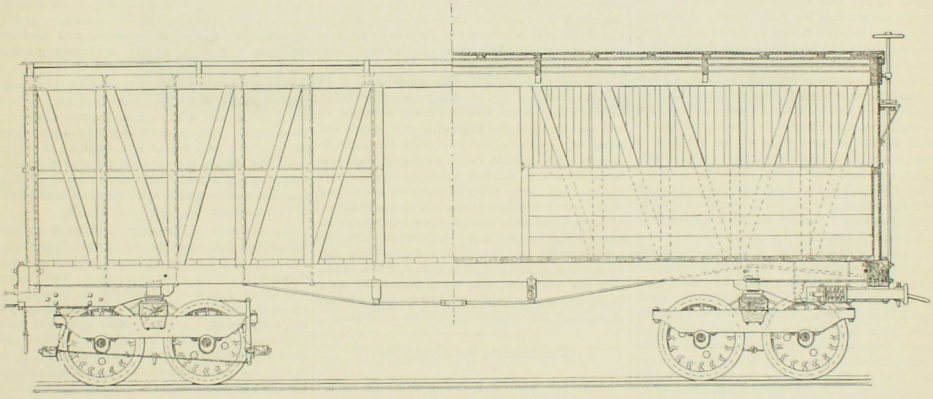
The average weight of these cars is 21,000 pounds, and their carrying capacity is 40,000 pounds. The dimensions of axles are as follows: Length 6 ft. 11¼ in.; Diameter at Center 3⅞ in.; Journals 3½ × 7 in.; Diameter of Wheel Seat 4½ in. Iron Body Bolsters are used.

STANDARD FREIGHT BOX CAR OF THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD.

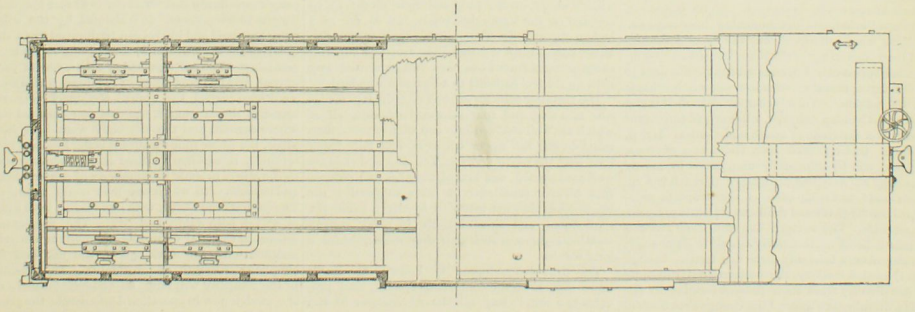
Built at Hartford Shops—L. Packard, M. C. B.



Side Elevation.



Outside View of Frame. Longitudinal Section.



Horizontal Section—Floor Removed. Floor. Roof Frame. Roof

Communications.

Railroad Enterprise in South Africa.

To the Editor of the National Car-Builder:

Not much is heard in this country of South Africa or its resources, yet that land has developed in a very remarkable way within the past ten or fifteen years. A feature of that development not the least interesting to American manufacturers, is the extension of railroads throughout these distant colonies. It was not till the year 1863 that the first railroad in the Cape—the oldest settled colony—was opened from Cape Town, the capital, to the village of Wellington, about 60 miles northeast. In the next few years it reached the town of Worcester, 100 miles inland, but from here it had to be carried through a wild and difficult mountain range, known as the Hex River Mountains. The line reached an altitude of 6,000 feet above the sea here, with some gradients of over one in forty; and such were the obstacles encountered in the defiles of these mountains that the work was suspended, and the whole scheme seemed likely to be abandoned, till at last it was decided to reduce the road to a narrow gauge, and the range was then successfully surmounted. It was then carried forward over the "Karoo" country, and in February last was formally opened to the town of Beaufort West, a distance of 360 miles from Cape Town. In the meantime a branch line has been constructed through the grain district of Malmesbury, and a loop line taking in the wine and fruit growing district of Stellenbosch, so that the produce of all the western districts of the Cape, including the wool and ostrich-feather products of Beaufort and the more northerly districts, now finds access to Cape Town by rail. A small suburban road also runs from Cape Town in the direction of Simon's Bay. Within the past eight or ten years other large works have been in progress in the colony. A line was last year opened from the midland country sea-port of Port Elizabeth to Graaf Reinet, 200 miles inland, and passing through the ostrich-farming regions. Another has been opened from Port Elizabeth to the town of Grahamstown, nearly 100 miles northeast, and is being, continued, from a junction about 40 miles below to the inland town of Cradock, more than 200 miles distant from the seaport, this system bringing down the wool, ostrich feathers and other produce of a very wealthy tract. From East London, the eastern port of the Cape Colony, a line has just been opened to Queenstown, with a branch to King Williamstown, about 150 miles. In Natal, again, a line of about 20 miles was opened from Durban (Port Natal) to the sugar plantations, and in 1876 another line, intended to run through the whole colony, was started. This is now about completed to Pietermaritzburg, about 70 miles from the port, and it is intended to prosecute it inland to the Transvaal. At the session of the Cape Parliament just concluded important extensions were submitted, but the local jealousies and loud clamorings of the many constituencies interested apparently intimidated the government to such a degree that they withdrew the whole scheme for the session. These schemes, which it is not likely will be long deferred, will have an important effect upon the trade of South and Central Africa. Without tracing each line, the scope of these schemes will be sufficiently understood by saying that they are designed ultimately to reach the interior trade, and from each of the seaports mentioned converge toward the diamond fields as a common centre. The western line from Cape Town is to take a direct northeasterly course to Kimberley, passing over a tolerably level and fertile, though thinly settled country; the eastern lines run more or less directly from their present termini to the fields, draining the trade of the Orange Free State in their course. Now there are at present in operation about 1,000 miles of railroads in the Cape Colony, besides nearly 100 in Natal; while the Cape Colony extensions will make about 1,000 miles more. All these extensions should be completed within the next five years, as there are few engineering difficulties in the way. Now, the question I propose here to consider is the probability of introducing into South Africa cars of American manufacture. At present there are only three small workshops on all the Cape lines, and these are used only as repairing shops. On account of the scarcity of wood, it is probable that Africa will always import all her cars and plant. At present the only cars and engines in use are the English, the former chiefly from Birmingham. Yet the character of these roads is such as to be eminently suited for American passenger cars. The lines are long, the stations far apart and the weather often inconveniently sultry. The present cars being compartment carriages, with no water tanks or other conveniences, passengers going long distances often suffer no small distress, especially on arriving at a station where no water and very little of other accommodation is to be had. Now, of course, in the introduction of an American car some prejudice would have to be overcome among the engineers, who are accustomed to their own English style of manufacture; but all the South African railways are government institutions, and the question after all is eventually much in the hands of the public. Many colonists who have traveled already appreciate the superiority of American cars, and once an introduction of them was obtained it would not be difficult to secure a general adoption. As to other railway plant, such as engines and line material, I am not certain that Americans could compete with the English, and I do not think it would be of any advantage to the colony if they could, however much it might be to American trade; for English work is simple and cheap in my opinion, and their plant, being chiefly of iron, is not liable to rust in a country where the climate is so dry. But as to passenger cars, the style at present in use there is a frequent subject of complaint, especially among colonists who have traveled abroad, and who, traveling in a hot climate, on trains which do not make over 25 or 30 miles an hour, miss the comforts of a well-appointed car. From personal knowledge, therefore, I am certain that the American cars, once introduced on a South African railway, would be speedily adopted throughout the country. E. B. BIGGAR.

New Standard Box Freight Cars.

CHICAGO, ILL., September 23, 1880.

To the Editor of the National Car-Builder.

I had the pleasure some few days ago of seeing come over our road, some new freight box cars, built by the New York Central, at their West Albany shops, on the proposed new model to be adopted on the Vanderbilt roads, and so far as I had an opportunity of examining the construction of the cars, I must say that they are very superior to the general run of box cars, and such that any road might feel satisfied to adopt as a standard.

The framing consists of the two ordinary center sills, two side, and four intermediate sills, all of which are well tenoned into end sills, of more than usual depth, the upper edges of end sills being level with the top of flooring. The sides and ends are well constructed, and braced together in a manner that insures confidence in their supporting the heavy loads they are intended to carry, while the roof, doors, and sheathing, are in every respect weather tight, and look as if they were good for a long service.

The draw-bar adopted is known as Hoit's improvement on the continuous system, and provides in a simple way, all the advantages of the continuous bar, without its disadvantages.

The draw-head is somewhat of the usual pattern to take the common link and pin. The draw-bar or rod is connected to the inner end, and extends toward the middle of the car, through the cross-tie timber, behind which is the draw-spring. The buffer spring is placed immediately behind the shank of the draw-head, against timbers bolted under the center sills, and which extend to the cross-tie timbers. The cross-tie timbers are in a measure connected by two long bolts, which virtually connect the two separate draw-bars, and make them as one continuous bar, with the difference that each draw-bar acts independently of the other, and either one or both, have the advantage of separately drawing or pushing by the aid of the draw-timbers and sills throughout their entire length. The arrangement of this draw-gear is certainly the best that has come under my notice, and I doubt not, that in practice, it will prove the most effective as well as the most economical draw-bar in use. There is nothing about it liable to disarrangement, unless the material or workmanship be faulty, or it gets damaged by accident.

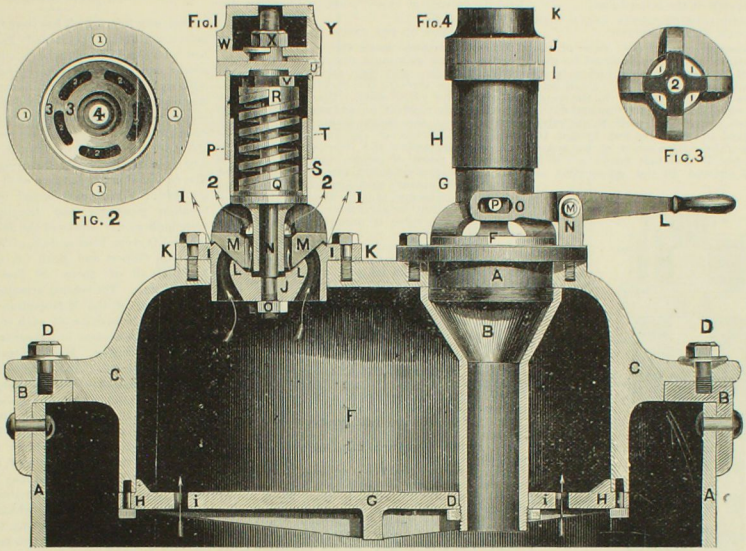
The trucks, with the exception of the bolster and brake beams, are entirely composed of iron. Their side frames are after the New York Central latest pattern, with the Theilsen channel-bar transoms. The axle boxes and covers are those so well known as the Hewitt pattern. This truck, combining as it does the channel-bar transoms, the Hewitt box, and the New York Central framing, constitutes it, in my opinion, the best truck in existence, and I have no doubt that its strength and wearing qualities will bring it into deservedly general use.

Taking the car as a whole, I consider it in every respect as A 1, and will watch anxiously to see the drawings and specifications published (which, from inquiry I understand they will be shortly), for the benefit of other roads who are waiting to follow suit, and begin the consummation of that long-talked of, and desirable millenium, when all our box cars shall be built by the common sense rule of uniformity.

If such a state of things ever becomes an accomplished fact, when the rolling and other working parts of any one company's cars shall be exact duplicates of every other company's; when there will be no longer the necessity of keeping an enormous variety of castings and forgings in the shape of dead stock; then, just so soon will railroad companies realize that their properties are good paying investments, and the wonder will then be how the former expensive system could so long have retained its existence.

JERONOMO, M. C. B.

A SUCCESSFUL trial was made a few days ago at Brookline, Mass., of the New England Car Company's new dump car. The car is 32 feet long and weighs 19,800 pounds. It is claimed by the company that coal and gravel can be dumped from the car inside of three minutes, thus saving much time and labor. The car was loaded with over 18 tons of coal, and all thing being in readiness, a medium-sized man turned the crank, the machinery responded, the car tipped, the coal was emptied out where desired, and the car body went back into place, the whole time consumed being less than two minutes. It was then operated slowly from one side to the other, to show its simplicity of construction, and the ease with which one man could handle it. The car has been tested, with like results, with loads of gravel, both damp and dry. The gentlemen present at the trial expressed themselves entirely satisfied with the workings of the car and its simplicity, strength and durability. The busines of the company will now be actively pushed, as the models now in operation demonstrate the great utility of the invention.



THE HEWET SAFETY VALVE,

As Attached to a Boiler Having an Ante-Chamber in the Dome Head.

The Hewet Patent Lock-Up Safety Valve, combined with the Hewet Vacuum Valve.

The first combination of the kind ever constructed for use on a high pressure boiler.

The frequent occurrence of disasters from the explosion of steam boilers, attended generally with great loss of life, calls for the adoption of the very best methods of construction, as well as of the very best appliances for preventing undue pressure of steam within boilers, when in use.

A boiler should be so constructed as to have its several parts, as the *Crown-Sheet*, the *Combustion Chamber*, the *Fire-Box or Furnace* built separately, each perfect within itself, and attached to to the other parts by means of suitable bolts, stays, etc., in such manner as to form steam-tight joints. This method of construction would confine the unequal strain of each part within itself, thus adding to the general strength of the boiler, and rendering it less liable to explosion.

To prevent, as much as possible, all pulsation of the iron, and thus to prevent a gradual weakening of the boiler, an ante-chamber to the dome head, as shown in the foregoing plate, is a most excellent adjunct, irrespective of the kind of safety-valve used for discharging excess of steam.

Over the ante-chamber F the two valves are placed, Fig. 1 to be used as an equalizing valve, and Fig 4 as a reserve valve. The former must be set to blow off at the required pressure. It discharges directly from the ante-chamber, which is supplied with steam from the boiler A A, by means of its ports *i i*, which should be of sufficient capacity to admit steam from the boiler as fast as generated under the hottest fire, so that the steam will be at the same pressure in the ante-chamber as in the boiler. The ports L L of the valve-seat should be greater in area than the ports *i i*, in the ante-chamber. In consequence of this excess, the valve closes upon its partial exhaustion of steam in the ante-chamber, leaving the pressure almost uniform in the boiler.

Fig 2 is a top view of the valve-seat, showing the ports 2 2 2 2 2; and Fig 3 is a top view of the valve showing its inner discharges 1 1 1. Fig. 4 on plate 1 is a perspective view of the reserve valve, provided with a lever for the purpose of lifting the valve in case of necessity, its interior construction being identical with Fig. 1.

As the larger area of the valve ports is not exposed to the pressure of the whole volume of steam in the body of the boiler, the amount of steam thus discharged will be much less than if the valve opened directly from the boiler; and no excessive discharge can possibly occur, if the boiler is provided with the proper valve.

An excessive exhaustion of steam often causes great inconvenience when a full volume of steam is required; besides, the vibrations in the metal of the boiler produced by it, cause the iron to granulate and gradually to lose much of its tensile strength.

When the ante-chamber is used, the reserve valve should be provided with a tubular communication B, through such ante-chamber, thereby discharging directly from the boiler.

This ante-chamber is not an indispensable adjunct to secure a perfect action of the Hewet Valve, but it can be advantageously used for the reasons above stated.

SAFETY VALVE.

No boiler under a pressure of steam is safe without a reliable safety valve. Such valve must be absolutely certain in its action, prompt to open and close at the proper instant, so as to prevent not only over-pressure, but undue exhaustion of steam. Over-pressure weakens, if it does not explode the boiler. Repeated over-pressure and excessive blowing off causes a pulsation of the iron, which is sure to result in a granulation of its fibres, and the gradual destruction of its tensile strength. In proof of this, it is only necessary to closely examine the iron of an exploded boiler, which has been subjected to over-pressure and exhaustive discharges for a considerable length of time. It will be seen that the fibres of the iron have become stringy and separated from each other, showing interstices of iron oxide, granulated into almost an impalpable powder.

All high-presure boilers should also be provided with a vacuum valve, to prevent the formation of a vacuum through condensation of steam above the water where it is allowed to cool. The external atmospheric pressure upon the surface of a boiler being fourteen pounds per square inch, it follows that it becomes a straining force toward the centre of a boiler at once, when the steam pressure inside falls below the air pressure outside of the boiler; and when the condensation of steam is complete, the vacuum formed above the water leaves the boiler practically without any internal resisting force to counteract the pressure of the atmosphere. The water left in the boiler, when not held down by the elastic pressure of a volume of air above its surface within the boiler, cannot practically act as a resisting force outward against the air pressure on any part of the boiler, for the reason that the water will yield readily to external pressure, and its weight can never be but a fraction of the weight of the atmosphere, which is equal to a column of water thirty-two feet in height.

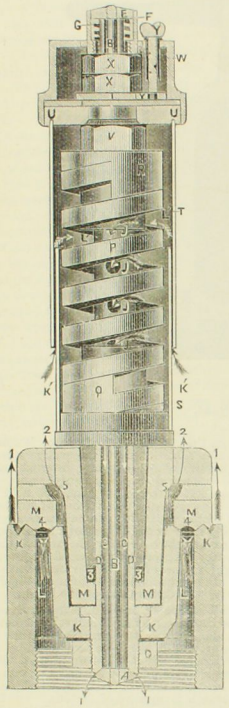
The evil effects of a vacuum are easily shown. Take, for instance, a boiler 42 inches in diameter and 12 feet in length, the aggregate atmospheric pressure around its shell—to say nothing of the pressure against its ends—is upward of 130 tons, and the aggregate pressure against a section of the top or of the side, 3 feet in width, and 10 feet in length is upward of 30 tons. Of course, when the boiler shell is a perfect cylinder, the opposite cross pressures upon its external surfaces, one-quarter way around from any given point, in a great measure counteract the tendency of the boiler to collapse by the weight of the atmosphere, but this circumstance cannot prevent a heavy inward strain of the boiler in all its seams—the greatest strain being upon parts midway between the ends—evey time a vacuum is formed. And as the boiler must sustain an enormous outward strain when under steam, the effect of these repeated strains alternating in opposite directions, first outward when under steam, then inward when containing a vacuum, is to gradually wear the iron around the rivets and to open the seams where the boiler plates are joined, thus weakening the boiler and causing leakages at the seams and around the rivets. This alternate pressure in opposite directions is more injurious because of the lapping of the boiler plates one upon the other, at the seams; since the laps act as lever arms prying against the rivets, when the boiler is strained either inward or outward.

The injurous effect of atmospheric pressure upon the boiler shell, in case of a vacuum, is increased where any portion of it is not the arc of a circle, and its force is exerted inside the boiler-tubes as well as against the ends of the boiler; the pressure against the end of a boiler 42 inches in diameter being 9½ tons, and its effect upon the

end of a boiler is to bend it slightly inward and to loosen the ends of the boiler-tubes.

HEWET'S AUTOMATIC LOCK-UP SAFETY VALVE WITH VACUUM VALVE COMBINED.

This cut represents a sectional view of the Hewet Valve with its lock-up, as designed for use. The valve M M M M, having an outer and an inner discharge, as indicated by arrows 1 1 2 2, is held down against the pressure of steam by the spiral spring P. The valve moves freely up and down the spindle, which serves as a guide to the valve and is firmly fixed to the valve-seat by nut O. The spindle is provided with a screw at its upper end for the set nut V, and jam nuts x x. K K K K, valve-seat screwed to the dome head of



boiler. R cap, and Q step, each made to conform to the spiral shape of one entire coil of the spring, in order to prevent its getting out of line, and the valve from binding. S, inner tube which is fixed to step Q, and which has a bottom resting on the top of the valve and pierced with a hole for the spindle to move in. T, outer tube, fixed to the flanch U. W, lock-up box, and Y, key. Said tubes slide the one into the other, as the valve opens or closes, and they serve not only to cover and protect the spring, but also, in connection with the lock-up, to prevent tampering with the valve. The port openings through the valve-seat are connected at the top by an annular recess or cavity running around and in the valve face, as at 4 4. The pressure of the spring is communicated to and has its bearing upon the valve at 3 3. The tension of the spring is increased by turning the adjusting nut V, which crowds the spring down the spindle. The valve when closed exposes only a small portion of its area to the pressure of steam from the boiler, namely, that of the annular cavity above the port openings through the valve seat. Nearly all other safety valves now in use, which are held down by a spring, expose an area of resistance to the constant pressure of steam equal to the whole area of the valve; and the spring must therefore be set at a high tension, in order to hold the valve in a closed position when not discharging steam.

ACTION OF THE HEWET VALVE.

When the pressure under the valve is within a fraction of the maximum pressure not to be exceeded, the valve will open and the steam will seek to escape through the opening between the valve and the valve seats. Upon opening, the valve instantly receives an additional lift by the elastic force of the steam acting against the exposed upper surface of the valve-seats, and the rush of steam against the overhanging valve-lip at its outer point of escape, together with the wedging pressure of steam toward its inner discharge, and its upward rush against the valve at its inner points of escape, at 5, 5, throw up the valve at once to its full height; when the boiler is relieved, and the valve is promptly closed by the tension of its spring.

As the steam does not reach this valve in one volume, but reaches it through a number of narrow port openings in its seat, and which terminate in an annular cavity, the valve is thus prevented from throwing water.

As this valve has both an inner and an outer orifice of discharge, it need not lift so high as must the valve of a like size with only one orifice, in order to discharge a given amount of steam in a given length of time.

Special advantages of this valve over the other safety valves now in use:

1st. In its construction it is the simplest and the least liable to derangement.

2d. It has fully one-half greater orifice of discharge.

3d. It lifts instantaneously higher, and it has no explosive pop.

4th. It relieves the boiler at once, and without any waste of steam.

5th. It absorbs from two to three times less of the tensile strength of its spring, thus causing the spring to be more sensitive, reliable and durable.

6th. Its lock-up cannot be tampered with.

7th. The arrangement of its discharge ports prevents any throwing of water.

THE VACUUM VALVE.—Mr. Hewet has invented a Vacuum Valve, to be used in combination with his valve or otherwise, the same being shown on the foregoing plate. The safety valve spindle is a hollow tube of sufficient strength to perform the office for which it is designed. A is the vacuum valve, having for its seat the lower end of said tubular spindle. It is held in place by the rod B which extends through the whole length of said hollow spindle and through the top of the lock-up box. Into the top of the lock-up box there is fastened the short cylinder F, and the upper end of said rod is screwed into the plug E, which moves up and down like a piston in cylinder F. Around said rod and within said short cylinder there is placed a small spiral spring G, which rests upon the top of said hollow spindle, and crowds upward against plug E. Said hollow spindle is provided with air holes J J J J. The outer tube T is made with a diameter sufficiently large to allow the air to pass freely between it and the inner tube S at K K'. Rod B is surrounded by the hollow space C, and it is provided with small flanges or guides to hold it in the centre of said surrounding space, as the vacuum valve opens and closes.

When the steam condenses in the boiler, so that its pressure falls below that of the atmosphere, the atmospheric pressure upon the top of plug E will crowd it down upon and compress the spring G (which is set to resist only a small weight), and then, as rod B descends with the plug, the vacuum valve will open. When the vacuum valve is open the air will rush through said air passage K' K', said air holes J, J, J, J, and along the space surrounding said rod and into the boiler. The vacuum valve will remain open until the space above the water in the boiler is filled with air of equal density with that of the atmosphere, when it will be closed by the tension of its spring.

The Hewet safety valve patent covers an arrangement of two seats on the same plane, one on either side of the steam passage; also the arrangement of a case, enclosing the spring and forming a lock-up, which has for its sides two tubes, one sliding into the other, as shown in the foregoing plates. He claims that these two arrangements have been and are now being infringed by certain valve manufacturers.

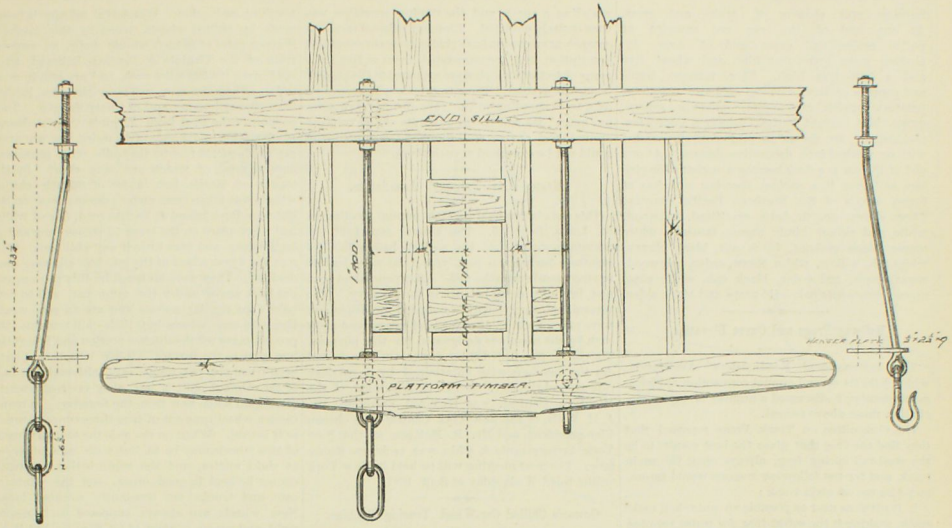
All orders and communications may be addressed to Champlin & Spencer, sole agents, dealers in Railway, Mill and Machinists' supplies, 152 and 154 Lake Street, Chicago, or to Acme Safety and Vacuum Valve Manufactory, Central Block, Market Street, Chicago. For particulars, send for illustrated circular.

New York, Wood Haven & Rockaway.

This new line, which has recently been opened between Hunter's Point and Rockaway Beach, has been supplied with a large equipment of passenger cars designed especially for summer travel. Although the running of trains over the new route was begun too late for the development of a paying business during the present season, the facilities for access to this attractive seaside resort will be available next year, when the famous mammoth hotel will be in readiness for the reception of guests. The new equipment consists of 61 regular passenger cars of a uniform style and finish, and 8 combination passenger and baggage cars. They were built at the works of the Jackson and Sharp Co. and Bowers, Dure and Co. of Wilmington, Del. and the Gilbert and Bush Co. of Troy, N. Y. They are all of them 50 feet long, exclusive of platforms. The seating arrangements are similar to those of the Metropolitan Elevated road, there being side-seats at each end, and 16 non-reversible cross-seats in the centre, the latter upholstered in leather. Each car seats 64 passengers, and in addition to this, a quantity of camp-stools are folded and stowed away under the side-seats, to be used in the intervening space when required, so that with these, each of the regular passenger cars can seat about 100 persons. There are 18 windows on a side, with white holly slat blinds that slide up into the curve of the roof, and can be raised or lowered to any extent that may be desired. The inside finish is in plain mahogany, with the exception of the ceilings, which are decorated oak. The bell cords run along the side, and the lighting is by three cehtre two-lamp chandeliers. The cars have 42-inch cast-iron wheels, made at the Ramapo Works, also air-brakes, Janney couplers, 4 check-chains to each truck, and substantial iron platform gates. The outside is painted a light maroon color and brilliantly varnished. These cars, together with those recently built for the New York Central & Hudson River road, a description of which was published in our last issue, indicate the style which is coming into vogue for local traffic and short excursion trips. They are light, airy, comfortable and attractive, and are likely to supercede for this kind of service the heavy regulation style of continuous cross-seats, plush upholstering, canvas head-linings, and wide spaces between the windows.

The locomotive equipment consists of nine locomotives built at the Hinkley and Rogers Works. The track diverges from the Long Island road and runs across the pleasant farming country to Jamaica Bay, which is crossed by some 4 miles of trestle-work resting upon piles driven deep into the earth. The greater part of the track is laid with steel rails. Mr. A. S. Hatch is President of the new road, and Mr. J. M. Lunt, formerly of the Portland and Rochester, is Superintendent.

THE Russian railways are owned by the government. They have been built for the most part for strategical purposes, and without any regard to their use by the commercial or traveling public. Hence it happens, according to a late report by the British Consul-general Stanley, that in Russia, the railways are so many through lines, with no branch lines connecting with them. As an illustration he instances two lines which run parallel to each other for nearly five hundred miles, and have not a single transverse line connecting with them for the whole of the distance. The result is that to get from one town to another, almost in the same latitude, the traveller has to take a long journey north by the one line and then return south by the other, so that to get to two towns only three hundred and fifty miles apart, it is necessary to make a railway journey up one line and down another of seven hundred and fifty miles.



SAFETY CHAIN-COUPLING FOR PASSENGER CARS.

THE drawing illustrates the method in use on the Kansas City, St. Joseph & Council Bluffs and other western roads by which safety coupling-chains are attached to passenger cars. Its advantage over some other methods in use consists in the greater security it affords in case the draw-bar should pull out, or the draw-bar coupling fail from any cause. A good deal of trouble has been experienced on some roads, especially at the West, in cases where the chains have been fastened to the platform timber alone, but when the fastening is extended to the end-sill, as shown in the diagram, the trouble has ceased. As there are many roads that run their line coaches over other roads it is important that these attachments should not only be safe and strong, but as near a uniform standard as possible. The method here shown may not be in all respects the best that can be devised, but it is certainly to be preferred to those in which the fastenings are made to the platform timber only.

An Underground Railway in New York.

The project of an underground railway for rapid transit in New York has again been revived, and a company organized for the purpose of carrying it into effect. The main line will run from the Battery, under Broadway to Madison Square, and from thence through Madison Avenue to 42d street. Beyond this point the project has not yet taken definite shape. In reference to the manner of construction and operation, we condense the following from the *Iron Age:*

"The road will be built in this way: Two single-track tunnels, each 15 feet high and 12 feet 6 inches wide, will run side by side, and separated by a brick wall. They will lie directly under the middle of Broadway, just below the water pipes, and reaching nearly to the curb on each side. The tunnels will be partly arched and partly supported by beams. The street will first be covered with heavy planks and timbers—in fact, converted into a plank road—over which the usual traffic may continue uninterruptedly during the work of excavation. The tunneling will be done from a side street. The planking on the surface will be laid for 1500 feet at a time, and removed as the tunnel is completed, while underground beams and supports will be placed every 8 feet ahead until the walls of the tunnel are bricked up. The tunnels will, as a rule, follow closely the surface grade of the streets, and the tracks will be at an average of 25 feet underground. On Murray Hill, at 38th street, however, the pavement will be 62 feet above the tracks in the tunnels.

"One of the chief advantages claimed for the tunnel will be its dryness. Built of brick and cement, and with a hard white finish, the walls on all sides will be covered with asphalt. This will, it is expected, render the tunnel impervious to water, and the system of ventilation proposed is relied upon to prevent any dampness. Thus, the temperature being always uniform, no allowance will be made for contraction and expansion of the rails, as is necessary in any open-air railroad, and the rails will therefore be laid on a hard bed of ballast, covered to prevent dust, with the ends nearly touching together in one continuous rail. This is relied upon to prevent in in a large measure the usual joggle of railroad riding, and the cars will roll as smoothly as a ball in a bowling alley. Large locomotives will be used, somewhat like those in the London underground railway. They will burn coke and consume their own smoke. The exhaust steam will be condensed, and nothing will escape to vitiate the atmosphere of the tunnel but a little gas. The cars will be, a part of them, after the style of the Pullman parlor cars, and others a modification of the English railway carriages, with entrance at the side. It is proposed to light them, as well as the tunnel itself, with electricity. An electric machine will be placed on each engine to run the headlight and the candles in the cars.

"The problem of thorough ventilation has been considered carefully, and it is believed by the enineers that it has been solved. At the principal stations air-shafts will rise up 75 feet, and other openings will be made at frequent intervals. Through these air will be introduced by artificial means. A novel feature of the system is making the locomotive a sort of piston head or plunger, by means of a broad flange about the cab, reaching nearly to the sides of the tunnel. Each train will, it is expected, force the air ahead as it runs, and cause a suction and consequent draft of air in its wake. By having two tunnels, the trains in each running always in one direction, a current of air is thus established. The vitiated air will be carried ahead to the first opening and expelled, while fresh air is drawn in by the passage of the train. In London, where two trains pass in opposite directions in the same tunnel, a whirlwind is caused and the gases and smoke, if any, eddy round and round, and remain in the tunnel. By the system of two tunnels it is thought that this defect can be remedied with but an inconsiderable addition in the power expended."

A Northern Pacific Farm Produce Car.

A car has been constructed under the auspices of the Land Department of this road, designed for the exhibition of farm products from along its line. The car arrived at Chicago a short time ago, en route for the eastern cities, and is thus described:

The car, a new baggage car, with arched and extension roof, is painted outside a bright straw color. At the center, each side, is an oval, 15 × 5 feet, painted a rich wine color, on which appears in gold and bronze letters, "Products of the Golden Northwest." At each end are similar ovals, 9 × 4 feet, one inscribed "Minnesota and Dakota," and the other "Montana and Washington." On the upper line of the car, each side, is painted in gold and green, "Northern Pacific." At the top of the car, each side, are suspended four banners, inscribed respectively, "Minnesota," "Dakota," "Montana," "Washington." Inside, the car is 50×10 feet. The floor is painted dark, the walls corn color, and the roof a light pink tint. The extension roof is decorated inside with small sheaves of grain, arranged in diamonds, circles, stars and ovals with large sheaves alternating, and all the sheaves neatly tied with red and blue ribbons. On one side of the car, at the center, is a black walnut semi-circular pyramid, or stand of shelves, holding seventy-two samples, in glass, of grain. Underneath, all around, are bins filled with choice vegetables. On the walls are hung six dozen photographs of scenes in the Northern Pacific country. The wall opposite the grain stand is decorated with twenty-three different varieties of grass. Underneath are bins and boxes of minerals. All about are wreaths,

festoons and sheaves of grain and grass. At one end of the car are samples of pulled grains and grass and of corn, including grass seven feet high and wheat five and a half feet high. Flax, tobacco, beans and peppers, celery, carrots, cabbage, tomatoes, potatoes, apples, crab-apples, currants, grapes, grape-vines, currant bushes, squashes, pumpkins, melons, etc., are shown in profusion, surrounded with or worked into decorative designs. At one end of the car is a desk bearing a registry for visitors and over it a cabinet showing a variety of forest woods of the Northern Pacific country. Those shown are fir, balm of Gilead, ironwood, white and yellow birch, sumac, tamarac, white maple, black crabnut, black ash, black cherry, white ash, willow, white thorn, cedar, basswood, sugar maple, red cedar, black oak, white pine, aspen, elm, white oak, wild grape and black alder.

Railway Frogs and Curve Elevation.

The International Roadmasters' Association, which held its second annual convention at Chicago, September 8, discussed a number of topics, including those above named.

The Committee on Track Frogs reported that they find the frog that gives the best results to be the steel-rail spring frog, always open for main track, and for the following reasons would recommend its use on main track :

1. It gives as near as possible an unbroken main track, making it the safest frog for trains running at a high rate of speed.

2. It gives no jar to rolling stock and is the least injurious to wheels and springs of rolling stock.

3. Its durability is greater than any open or rigid frog. It costs less to keep it in repair, and is therefore the cheapest, the first cost being no more than any other steel-rail frog per foot.

The committee also find that the frog that gives the best results in large yards where switch-engines are constantly working and where one side of the frog gets no more wear than the other, is the steel-rail rigid frog, with wrought or solid iron filling between point and wing rails, and would recommend that this class of frogs be put together with Clamp's ratchet keys, fastened with bolts horizontally through the keys, as your committee is of the opinion that the fewer holes there are in the necks of the rails, the stronger and more lasting will the frog be.

The Committee on the Elevation of Curves reported that the limit of curves should be 5 inches, it being preferable to reduce the speed of the trains rather than increase the elevation beyond that point; second, that changes of elevation on an old road should be done by raising the outer, or lower rail, as the case may require, it costing less to raise the rail than to reduce it; we recommend this as the most economical method under the circumstances where only one rail has to be changed. We recommend that the proportion of elevation at the tangent point to the maximum elevation should be three-fourths; that the rate of elevation on all curves where the speed is 35 miles per hour or thereabouts, should be three-fourths of an inch to a degree; but in approaching curves the rate of change of grade to get the necessary elevation at the tangent point should be 1 inch per 100 feet, where it is possible to get the room.

Mr. Latimer, chief engineer of the New York, Pennsylvania & Ohio road, in the course of the discussion, said that he had in practice on his road a system of laying out curves which precluded all elevation or depression. The curve was made on the same level as the straight track, and he was prepared to say that the old theory of elevation was wrong. A level curve could be so laid out that travelers would not know when they were rounding a curve, and the tipping sensation was thus entirely obviated. Eminent railroad men and competent engineers have ridden over curves of this description, and recommended them as free from many objections which were attached to the present American system. These impressions were formed on a train speeding at the rate of forty-five miles per hour. He was not an advocate of fast running around any curve, and thought too much care could not be exercised at such times.

Master Car Painters' Association.

This association held its 11th annual meeting at St. Louis, Sept. 15. The annual report of the Secretary states that the society had gained 15 members during the past year, and now had 50 paying members on the roll. All expenses had been met, leaving a small balance in the treasury. The several topics previously announced for discussion were taken up in their order, and essays read upon each by the members designated for the purpose. The convention lasted three days. On the second day the members were entertained by a carriage ride around the city. Mr. D. D. Robertson, of the Michigan Central, was reelected President; Mr. J. H. Wills, of the New York Central was chosen Vice-president, and Mr. R. McKeon of the New York, Pennsylvania & Ohio, was rechosen Secretary. The next meeting will be held in New York on the third Wednesday of Sept. 1881.

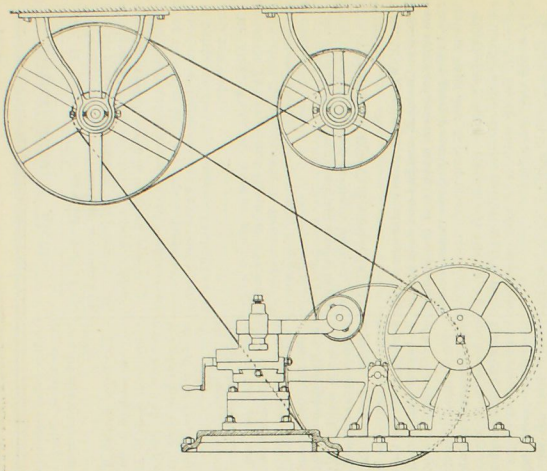
Gowan's Chilled Car-Wheel Trueing Machine.

The diagrams on the opposite page illustrate the construction of this machine. It is very substantial and well adapted to the purpose for which it is designed. The floor space occupied by the sole-plate is 12 ft. by 5 ft. 9 in. The bifurcating journal boxes for the grinding-stones are of a peculiar and improved form, one easily adjusted for taking up all slack, and are provided with oil-cellars, so as to keep them perfectly cool. The stones are of a special make for chilled wheels, and as they are brought in contact with them at a certain height, they always keep perfectly true. They are never liable to heat or glaze, and cut with great rapidity and without any delay. In connection with, and on the sole-plate, at the right of the operator, is an improved exhaust fan. From the latter, two four-inch pipes extend, terminating with hoods 18 by 15 inches at the top, and receiving underneath each wheel and stone the iron and dust severed from both. The pipes and hoods consist of five pieces, with bolted rubber joints, and thoroughly braced to the sole-plate, and can, when desired, be taken apart without injury and replaced. The location of the overhead work is controlled by the machine below. The long counter-shaft is in a vertical line with the bifurcating boxes or centers of stones. As the latter wears, it does not change the length of the belting. From this counter-shaft the exhaust fan is driven direct. This shaft acts as line shaft for short counter, using cross-belt from short counter to large pulley on machine, so that one belt from shop-line shaft and one slipper controlls all. One man can take a pair of wheels from 24 to 42 inches diameter, and put them in and take them out of the machine without help or the use of a crane. The wheels are rolled to their place the same as they would be rolled along a floor, when the operator steps down about 20 inches and directs the work, which is much easier than lifting the wheels to their place.

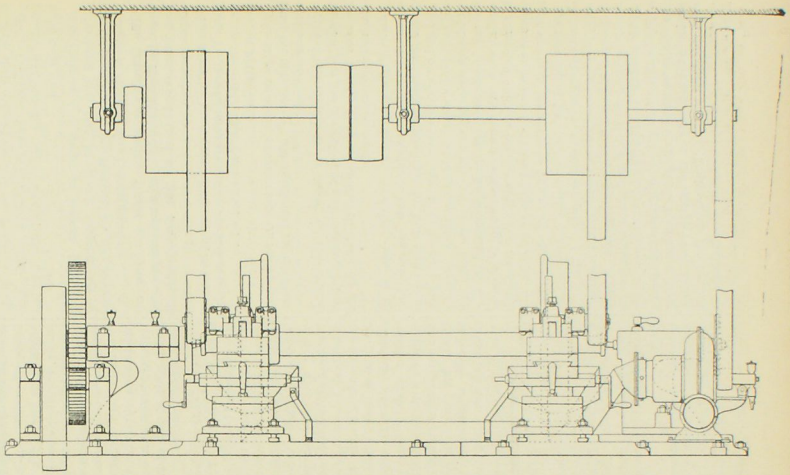
The practicability of this process for trueing chilled wheels has been fully demonstrated, and doing it on the axle is the only way it can be effectively done. As an evidence of the precision with which the work is done, a piece of thin paper placed between wheel and stone, will be cut at any point, the wheel and stone at the same time not touching each other. Wonderful mileage is being made by chilled wheels, trued by this method. Sixteen pairs of 33-inch wheels under an express train of the Virginia & Truckee Railroad, have made over 122,000 miles each, and are still in good order. They are now under freight cars, having been changed on account of sharp flanges. That portion of the road from Virginia City to Merrimack station, a distance of 15 miles, has an average grade of 116 feet to the mile, with numerous curves, some of which are very short. In the month of March last, a set of 33-inch chilled wheels was taken from under a director's car on the Chicago, Rock Island & Pacific road, one of which had a low place on the tread 12 inches long and $\frac{3}{16}$ inches deep, and very little if any chill left. This was the worst wheel of the lot, but all were condemned. They were all trued by this process and put back again under the same car, and to date have done regular service and are in good condition. In case where but little chill remains, the process takes off the thicker portion and brings the low spots to the surface. When wheels that have been trued are put under cars, although but half of the original chill is left, they are really worth more than when new from the foundry. In many cases a wheel runs out of true three times as much as it is oval. When on the axle the eccentric parts of two wheels may be in line with each other, or at right angles, and the result is that the track cannot be kept in good order, and the joints of cars and trucks are constantly working loose. New wheels are always supposed to be nearly right, and we are content to let then go, but if we had to turn out a fine coach, and had none but old flattened wheels to put under it, with ups and downs every ten or twelve inches on their periphery, and some of them $\frac{3}{8}$ to $\frac{1}{4}$ inch eccentric, we would feel very uneasy and expect reports of a bad riding car. Every one using this method of trueing wheels has experienced this. Cars supposed to be riding very good when coupled in trains with others having trued wheels, have been found to be quite otherwise. When roadmasters discover portions of tracks corrugated $\frac{1}{4}$ inch in every 100 or 200 inches, they at once set about leveling it up, and master car-builders, if they could but examine all wheels when pressed on the axles, they would find them eccentric from $\frac{1}{8}$ to $\frac{1}{4}$ inch, sometimes both high places in line, and sometimes at right angles. With such wheels we have not only to haul the load, but at every revolution lift the car and load two, three or four times, and then drop it again. If the track is level, it is equal in such cases to making the road a grade, and on the other hand such wheels would be worse on down grade. Brakemen cannot control trains. If on a level, they run rapidly into stations unless brakes are severely applied, and the result is flattened wheels, cracked steel rails, etc. Trued chilled wheels, to start with, are less liable to be flattened, and they also increase the life of cars.

Wheels can be put on axles as true as they are cast, but still defects of chill and shrinkage are there. Such wheels can be trued up on this machine at the rate of one pair per hour; but if they are out of true from $\frac{3}{8}$ to $\frac{1}{4}$ inch, as many are that have been in hard service and have not received proper attention, then they cannot be trued up in the same time. The process can be applied equally well also to steel-tired wheels, which are often found to be considerably out of true from running, and even when they are first put on the axles.

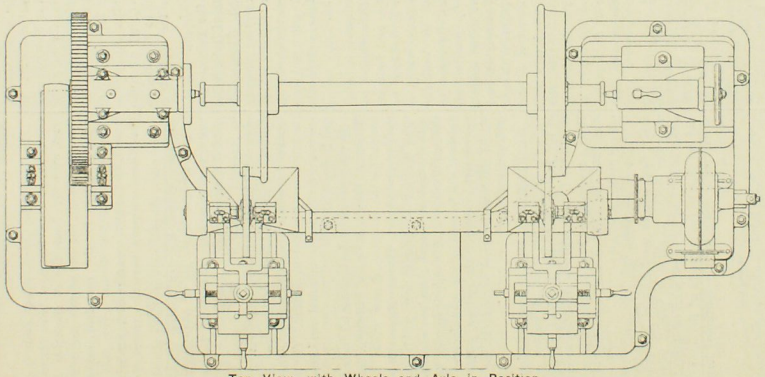
These machines are in use on the Central Pacific, Chicago & Rock Island, Chicago & Northwestern, Denver, South Park & Pacific, Virginia & Truckee, South Pacific Coast, and some other Western roads. Communications may be addressed to James H. Gowan, Superintendent, Box 382, Chicago Ill.; or Chilled Car-Wheel Grinding Co., Carson, Nevada.



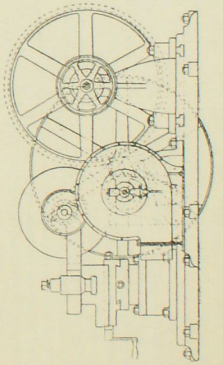
End View, Showing Counter-Shafts and Belting.



Side Elevation with Counter-Shafts—Dotted Lines showing Exhaust Pipes of Blower.



Top View, with Wheels and Axle in Position.



End View, Looking toward Blower.

GOWAN'S CHILLED CAR-WHEEL TRUEING MACHINE.

Miscellaneous Items.

Mr. H. A. Towne, the superintendent of the Northern Pacific Railroad, has been awarded a patent for a locomotive boiler of his invention. He also intends having patented an improved freight car door-fastener, which he invented recently.

The iron works of Missouri Car & Foundry Company are kept as busy as possible manufacturing car wheels and other castings for the large number of freight cars that the company are building at their new shops.

Mr. Alfred White, late assistant general manager of the Detroit, Grand Haven & Milwaukee, has received the appointment of Western agent of the Wagner Sleeping Car Co., with headquarters at Chicago.

Mr. John Scott, formerly assistant general manager of the Alabama Great Southern Railroad, has been promoted to the position of agent and general manager.

Mr. D. W. Caldwell, general manager of the Pittsburg, Cincinnati and St Louis Railroad, has been appointed general manager of the Vandalia Line, in the place recently made vacant by the death of Major John E. Simpson.

The Barney & Smith Company at Dayton, O., are making many extensive improvements in their car works, among which is a new paint-room 150×66 feet, three stories high.

The Baltimore & Ohio Railroad, having decided to sever their connection with the Pullman Sleeping-Car Company, have in process of construction twenty new-sleeping cars, which they will use upon their road.

The Pullman Car shops, in Detroit, have just turned out two very handsome sleeping cars to run between Boston and Montreal on the Boston, Concord & Montreal and Passumpsic lines.

The Detroit Car Spring Works are being enlarged by the addition of a brick building 45×105 feet, which is to be used for the manufacture of elliptic springs.

The Atlantic, Mississippi & Ohio shops in Petersburg, Va., are building a number of box cars for use on the road, which are expected to carry a load of 20 tons each.

The Blain Brothers, of Columbus, O., have a contract for re-building 1,000 freight cars for the Pennsylvania company.

Master Car Builder W. B. Snow, of the Illinois Central, has just completed 14 new passenger cars for local travel. They are similar to those on the Manhattan Elevated road.

John W. Thomas, Jr., of Nashville, who is an ardent devotee to the mechanic arts, has now completed the engine commenced by him some time ago, and by which a hand-car is to be propelled. He has added a steam drum to the boiler, placed a whistle on the drum and painted up the boiler and the car. Seats have been arranged around the car, while underneath them a sufficient supply of water is furnished, the new tender, as it were, taking the place of an improvised beer-keg used when the engine was in its primitive or formatory stage.—[Ex.

A NEW signal for communication between conductor and engineer, to take the place of the bell-rope, is being tested on the Pennsylvania Railroad. It is connected with the automatic brakes. A light cord runs along the side of each car, a slight pull on which operates an air whistle on the engine, while a slight escape of air in the car attachment assures the conductor that his signal has been heard, thus avoiding the necessity of the engineer responding with the steam whistle. It also saves the trouble of connecting and disconnecting the bell-rope in shifting cars, the connection with one car to another being made through the hose couplings of the air brakes. It is in operation on the Harrisburg accommodation and seems to work satisfactorily.

The faster a train is going the longer the distance is in which it can be brought to a stop. In experiments made in England, the Westinghouse automatic brake stopped a train moving at the rate of $41\frac{5}{10}$ miles an hour at a point only 485 feet distant from the place where the brake was applied, but when the speed was increased to 61 miles an hour, the distance run after the application of the brake was 1,185 feet, and when the speed of the train was increased to 67 miles an hour, the distance traversed after the application of the brake was 2,005 feet.

The new refrigerator cars of the Baltimore & Ohio Railroad are 29 feet in length of body, 8 feet 4 inches in width, and 7 feet high. They weigh 26,000 pounds each, and have a carrying capacity of 40,000. Each car has two sets of doors, which keep the air out. The flooring is sandwiched with sawdust, as are also the walls. At either end is an ice-box reaching from floor to ceiling, and capable of holding about 1,000 pounds of ice.

The Michigan Central R. R. Company is building three postal-cars, which are to be named respectively the Michigan, the Illinois, and Indiana. The Michigan is completed. It is 55 feet long by 9 feet wide, and weighs 52,000 pounds, which is about 7,500 pounds heavier than the ordinary coach. The ends are built with reference to strength and durability in view of a possible collision, when this car, being next to the engine, might suffer most. It is mounted on four-wheeled trucks, the wheels being 42-inch paper, with steel tires manufactured by Krupp. Attached to the car is the Westinghouse air-brake, and a new patent brake which works automatically when the Westinghouse is out of order. The Michigan is finished beautifully externally and internally. It is painted white with decorations in the Eastlake style, with corner and door-posts of deep lake color.—*Ind. Journal.*

The Ohio Falls Car Company have just delivered to the St. Louis & San Francisco road four elegant coaches named respectively the "Neosho," "Augusta," "Joplin," and "Pierce City." These coaches are fifty feet in the interior and are furnished with thirty seats, accommodating sixty passengers. The inside wood-work is very pleasing, the wood being cherry, with veneered panels of butternut wood. The seats are upholstered with green and crimson plush; the head-linings of wood, nicely decorated, and have three double Hicks & Smith nickel-plated lamps in the roof. There are sixteen windows on each side, which are wide and low, and the whole interior effect is very pleasant. They are all equipped with automatic air-brakes, Miller platforms, and all the latest improvements in every respect. They are dark color on the outside, very tastefully ornamented, and are in every detail model coaches.—*Ind. Journal.*

As fast as the improvements are completed in the way of straightening the track of the Pennsylvania road, the rolling stock abandons the curves and follows the new line of road. The result is found to be a great saving in the wear and tear of the trains by rounding the curves. When the work of straightening the line is quite finished, there will be a clear gain of fifteen minutes between Philadelphia and Harrisburg, besides the saving effected in the wear and tear of the rolling stock.

General Superintendent Thomas has signed a contract for the building of 100 box and 100 flat cars for the Nashville, Chattanooga & St. Louis railway, by the Ohio Falls company, and for the building of four passenger coaches by Jackson, Sharp & Co., of Wilmington, Del., to be delivered in October and November. Besides the above, 70 box cars are to be built at the Nashville shops. This, added to the 200 other cars, will give a new outfit of 270 freight cars.

The Louisville Car-Wheel & Railway Supply Company, of Louisville, Ky., have closed a contract with the Louisville & Nashville Railroad Company for all the car-wheels required by that railroad system for the year 1881, estimated at from 30,000 to 40,000 wheels. This will require from 7,500 to 10,000 tons of metal, for which the Car-Wheeel company have also closed contracts.

Eight new sleeping-cars are being placed on the Michigan Central, the first having already commenced service. They are 73 feet long,—18 feet longer than those hitherto in use. The exterior is painted maroon color. The interior is finished in veneered mahogany. The ceiling is of the same wood inlaid with neat and pleasing figured designs. There are twelve sections, one drawing-room and a smoking-room, 10×8 feet. The seats in the latter are finished in leather. The windows are large, giving ample light and air. The ventilation is excellent.

In consequence of the increase of their business Messrs. A. French & Co., of Pittsburg, have contracted for the erection of new works adjoining their present shops. The new shops will be about equal in size to the present ones, will be furnished with the best and most complete machinery for the manufacture of steel elliptic springs, and when finished, will be used for the manufacture of locomotive and passenger car springs. The present works will then be used exclusively for making freight car springs.

Mr. Wilson Eddy, after 40 years' continuous service, has resigned his office of master mechanic of the Boston & Albany Railroad, to take effect November 1. The board of directors accepted Mr. Eddy's resignation, at a meeting held in Boston, Aug. 26, and adopted the following resolution offered by Mr. Kimball:

"That in accepting the resignation of Wilson Eddy, Esq., master machinist at Springfield, the directors desire to place on record their recognition of his long extended term of skillful service and devotion to the interests of the company, and to express a wish for his continued health and future welfare."

MR. J. D. MCILWAIN, who has for the last five years held the position of Master Car-Builder of the Jeffersonville, Madison & Indianapolis Railroad, has accepted the position of Assistant Superintendent of the Missouri Car & Foundry Co., at St. Louis, Mo. Mr. McIlwain's capacity and experience in his vocation, as well as his excellent personal qualities, will make him a valuable acquisition to the company in whose service he is about to enter. He will remove with his family to St. Louis, and enter upon his new duties about the middle of the present month.

THE New York, Lake Erie & Western Railway Company is building at its Jersey City shops a number of emigrant cars that will seat sixty passengers each. The most noted feature about them are the seats, which were designed by Mr. Mileham, the Master Car-Builder. Both seats and backs consist of alternate slats of ash and cherry, with a small space between. The backs are shaped to conform to the spinal curve of the sitter, and the seats are concave instead of being convex, making a very comfortable seat, and one that is easily kept clean. Sixteen of these cars have already been put into service. Mr. Mileham is also building some combination smoking and baggage cars, the seats in the smoking compartment being like those in the emigrant cars.

NATIONAL CAR BUILDER

PUBLISHED MONTHLY

BY

R. M. VAN ARSDALE,

5 DEY STREET ..... NEW YORK

JAMES GILLET, Editor.

OCTOBER, 1880.

EDITORIAL ANNOUNCEMENTS.

Subscription.—ONE DOLLAR *a year in advance, postage prepaid. One copy will be sent free for one year to any person sending us five new subscribers.*

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR-BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received not later than the 25th day of the month.*

SUBSCRIPTIONS *to the* CAR-BUILDER *will be received, and copies kept for sale, at the following places:*

A. WILLIAMS & CO., 283 *Washington Street, Boston, Mass.*

L. SCHAFFNER, *Cigar and News Dealer, Grand Pacific Hotel, Chicago, Ill.*

WILLIE H. GRAY, 306 *Olive Street, St. Louis, Mo.*

ROBERT CLARKE & CO., 65 *West Fourth Street, Cincinnati, Ohio.*

A PRIZE FOR A CATTLE CAR.

The American Humane Society is making a most laudable effort to relieve the sufferings of live stock while in transit on railroad cars. A circular from the president of the society announces that the sum of $5,000 has been raised, pledged and deposited with trustworthy bankers, and will be paid as a prize to the inventor of a car, or of any arrangement that can be applied to stock cars now in use, by which cattle and other animals can lie down and rest in the cars, and also be fed and watered while traveling. Competent judges have been appointed to decide upon the merits of the models and plans that may be submitted prior to the 1st of January next.

In view of the liberal inducement offered, and the many attempts that have already been made to devise a car that will meet the required conditions, there will doubtless be a vigorous contention among inventors to win the trophy, and that the inevitable outcome will be that the best provision will be made for the suffering animals that can be made under the circumstances. We do not see, however, how there can be any very great improvement that does not involve an increase in the rates and cost of transportation. The feeding and watering of cattle while they are in the cars is a simple matter, and is already pretty well provided for by recent plans and inventions. The trouble is in making room for them to lie down and rest. An average size beef requires a certain amount of floor space in order to do this, and it is easy to determine just what this space must be, and the number of cattle that a car of any given length will accommodate. If the animals can be placed alternately heads and tails, with some kind of flexible stall divisions that will occupy the least possible space, so that a 32-foot car, for example, will enable 16 horned cattle to lie down at their pleasure and rest themselves, we do not see but the problem presented by the Humane Society is practically solved. Such a car has already been devised and is claimed to be a success, although we can not vouch for it of our own personal knowledge. Some account of it may be found in the April and June issues of the CAR-BUILDER for the present year.

If any thing better than this can be done it ought to be forthcoming within the ensuing three months, under the stimulus of the offered prize, but it is exceedingly doubtful whether inventive ingenuity can devise any plan by which the average bovine can rest himself on his journey without restricting the car load to a smaller number than is now carried, and thus increase the cost of transportation. The attempt is a good deal like trying to squeeze a quart of beer into a pint mug.

FOUR AND SIX-WHEEL TRUCKS.

Although there is a general tendency to increase the weight of engines and cars on our roads, there is at the same time a growing belief that the use of six-wheel trucks, even under the heaviest passenger coaches, is not by any means essential for safety or easy riding, and still less so on the score of economy, and that they may, and eventually will be, superseded by four-wheel trucks altogether. It is readily admitted that the former possess some advantages over the ordinary four-wheel trucks; it is also urged that these advantages have been very much diminished with improved road-beds and steel rails, so much so in fact as to be but a meager compensation for the extra material and weight hauled, and the additional friction in running as well as cost of construction. This being the case, it is a pertinent question whether the actual comparative advantages of six-wheel trucks may not be fully secured by some slight modification of the present standard styles of four-wheel trucks, giving them a somewhat longer wheel-base, and strengthening the journals and other parts in proportion to the increase of weight to be carried. The usual distance from centre to centre of journals in the ordinary four-wheel trucks is 6 feet. Let this be increased to 7 feet, and let the journals, instead of being 3½ by 7 in., be increased to 4 by 8 in. Let the timbers of the frame, and also the equalizing bars, be strengthened somewhat, a wider bolster introduced, and four instead of three-group elliptics; or, in a word, increase the capacity of the four-wheel truck so as to make it do the same work as the six-wheeled one, and do it equally well and with as great a margin of safety. The reduction of the number of bearing points from six to four, and the corresponding concentration of weight, is fully provided for by an increase in the diameter and length of journals, whether it be 4 by 8, as above indicated, or some other approximate size. The larger the journals the more bearing surface there is, and less liability to heat; and, as for strength, there can hardly be a question about that.

It is believed that four-wheel trucks modified in this way would carry the heaviest sleeping and drawing-room coaches as easily as the ponderous six-wheel trucks do, and much more economically, especially upon lines with moderate curvatures. The wheel-base would, it is true, be reduced from nine to seven feet, or in some cases from eight to seven, which is a small matter when weighed against the reduced complication and the amount of material that is got rid of—say four wheels, two axles, two pedestals, two oil-boxes, one bolster with its sand-plank, springs and hangers, a lot of bridge-work, and other minor details. If it can be shown that the getting rid of all this material and weight lessens in the same proportion the safe and easy running of heavy cars, it would be conclusive evidence in favor of retaining in service six-wheel trucks. But this, with a properly constructed four-wheel truck, with the advantages of steel rails, improved rail joints and better road-beds, will hardly be attempted. The permanent way of all our leading lines is constantly being bettered and brought more nearly to the standard of English roads, and the more this is done the less will be the real or apparent advantages of that extraordinary system of running-gear which places twelve 500-pound wheels and six axles under a single car in order to make it ride easy—to say nothing of twelve 42-inch wheels weighing from 700 to 800 pounds each, which are now running under some cars, and which is something more extraordinary still.

A well known car-builder was several years ago called upon to take charge of the car stock of a western road of which the late Governor Brough, of Ohio, was president. The passenger cars of the road were all running on six-wheel trucks, which were considered as much better than four-wheel as the greater number is superior to the lesser. The engines were light, and could not by any coaxing or vigorous firing be made to meet the pressing demand by the patrons of the road for greater speed. There was an unaccountable drag in the movement of the trains. A consultation of the officers was held to devise a remedy. The fault appeared to be with the engines, but the company could not afford to replace them with new and more expensive ones. An idea struck the car superintendent, which was that the trouble was all with the six-wheel trucks, and in spite of the reluctance of the officials to believe such a thing, he built some four-wheel trucks with a seven-foot wheel base, and, with these under the cars, the engines were able to make the required speed without any difficulty, in consequence of the diminished weight and friction resulting therefrom.

PRIMITIVE RAILWAY ROLLING STOCK.

The more the capabilities of railroads are developed in the way of improved engines and cars of every class to meet the demands of an enormous and constantly increasing traffic, the greater will be the interest in reverting to the first rude and feeble beginnings of the gigantic system. To measure the progress that has been made by contrasting the incipient with the latest stages, it is not necessary to go back beyond the recollections of people now living. The whole movement is comprised within the brief period of fifty years, and its character cannot perhaps, be more forcibly illustrated than by placing side by side one of the first and one of the latest built railway locomotives. A picture of what is said to be the first one built in America has recently been published in some of the railway and mechanical papers, and if the representation does any justice to the subject, it is greatly to be regretted that the machine itself has not been preserved intact for the inspection of the curious. It was built at West Point, N. Y., in 1830, for a South Carolina railroad, and was called the "Best Friend of Charleston." It resembled a junk bottle placed upright between two pairs of wheels, and weighed altogether about 4½ tons. Within the bottle were the furnace, boiler and chimney. Outside were two inclined steam cylinders, by which the wheels were propelled, and at the front an upright staff, from which streamed the stars and stripes, surmounted by a spread

eagle. With the exception of the national flag, the whole thing has a ludicrous smack of antiquity, as compared with the modern types of engines, that entitles it to a place among the cherished relics of a past age. If this primitive machine is such a curiosity now that the mere picture of it excites wonder and amusement, what must be the interest with which the thing itself, if carefully preserved in a museum, would be viewed a century hence? We do not know how many of these pioneer specimens of railway rolling stock were patented, nor how many models of this branch of mechanism are to be found in the Patent Office, nor does it matter very greatly. There are no doubt a great many curious and interesting landmarks to be found there illustrative of mechanical progress; but, from the mass of rubbish with which they are surrounded, they are about as much lost to public inspection as if they were entombed in the corner-stone of the building itself.

And this brings us to the suggestion that if all the relics extant of primitive locomotive and car construction could be got together and placed in a suitable building for preservation and permanent exhibition, it would be greatly appreciated by the present generation, and vastly more so by our posterity. It is probably too late to secure the originals of but a few of these "first" locomotives and cars; but by a properly organized and concerted effort, many antique specimens of early construction might be obtained that would be worthy of preservation as curiosities when the great railway system shall have advanced far beyond the point it has already reached.

WE print on another page an interesting communication from a gentleman who has for several years past been a resident of South Africa, and who is familiar with the progress of railroads in that distant colony. He is of the opinion that its increasing trade and commercial importance will soon impart an impetus to railway construction there which will open a market for American cars and engines that our builders will not fail to appreciate.

THE great success of the New York elevated railroads has led to the revival of the underground project which was agitated a few years ago. Gen. George B. McClellan is President of the new company, which is an indication that the undertaking, formidable as it is, will be pushed forward to completion with the utmost energy and dispatch. The underground fares from the Battery to Forty-second street are to be only five cents. This will do for a starter.

The First Sleeping-Car.

A writer in the Davenport (Ia.) *Democrat* thus tells the story of the first sleeping-car and its first public appearance: "I remember the date of its very first appearance—Sept. 16, 1856. I was on my way West, and had arrived at Toledo early in the evening, behind time, and had two hours to pass before the departure of the train from Chicago in the waiting-room. I had noticed a rather queer looking countryman, and somewhat to my surprise he accosted me with the inquiry: 'Wouldn't you like to see something new?' Of course I would, and I accompanied him out through the depot, among innumerable cars, one of which he opened, and after lighting several lamps, invited me to enter. Well, it was something new—a large car filled with a double tier of beds—bunks, more properly speaking. The man was Woodruff, the now well-known sleeping-car patentee, and this was the first sleeping-car and its first appearance in public. Mr. Woodruff had, during several years past, been obliged to accompany his wife, a chronic invalid, from Ohio to Philadelphia, for medical treatment, and her sufferings on the journey had constantly suggested the possibility of a more comfortable conveyance, and at last he had conceived the idea of portable and adjustable berths, and, buying an old car, he had worked out his idea, and had, only an hour previous, brought it in for a trial trip, which was to be made that same night."

A VERY effective plan for feeding and watering live stock in cars has been devised by Mr. A. D. Tingley, of New York. It is a simple device, entirely separate from the cars, and is erected about twelve hours' run apart, at suitable stopping-places along the track on both sides of the car. The arrangement not only provides for the comfort of the stock, but permits of their transportation with greater dispatch, and avoids the labor and delay of unloading.

The operation is as follows: The cattle-train is run on a side-track between the two rows of feed-boxes which are filled and in readiness. An attendant walking along the side pushes in one of the boxes at each head, and after they have had sufficient time to eat, he turns on the water in the main pipe, and it is distributed to each feed-box by the pipes, *F*. When the stock is watered, the feed-boxes are withdrawn, and the train moves on. For swine and sheep, an arrangement similar to the above, but slightly modified to suit its purpose, is provided.

Where the railroads will grant the right and privileges, with proper restrictions, a full and complete feed-station will be erected without cost to the railroad company. Address Union Live Stock Feeding Co., 113 Broadway, New York.

AT the meeting of the Railway Claim Agents' Association, held at Indianapolis, Sept. 8, the following resolution was adopted:

Resolved, That, with a view to curtailing the number of claims arising from the loss of grain doors, this association would recommend to the attention of superintendents and general freight agents that they take such action as is necessary to enforce the return of grain doors from terminal points east. That local and terminal agents be instructed to look after and be held responsible for the grain doors in cars delivered at their stations.

AT a recent trial of the Westinghouse air brake in Brazil, a painted pasteboard imitation of an immense rock was put on the track in front of a train, on which the emperor was a passenger. The engineer, who was ignorant of the deception, discovered the obstacle when the train, running at about thirty-two miles an hour, was within less than five hundred feet of it. The train was stopped in twelve seconds.

WHEN you see an article in the editorial columns of a paper headed, "The Political Outlook," look at the bottom line, and if it says "sold by all druggists" don't read it. There is such an advertisement going the rounds, which is an advertisement of a patent medicine. It is a counterfeit well calculated to deceive. Don't read a political article unless the owner's name is blown in the bottle.

TOODLEKINS is a very small man indeed, but he said he never minded it at all until his three boys grew up to be tall, strapping young fellows and his wife began to cut down their old clothes to fit him. And then he said he did get mad.

THE census of Rhode Island is completed, and some of the enterprising papers of that State print the names of all the inhabitants in full, devoting nearly a column to it.

A SCHOOLMARM who whipped the wrong boy by mistake apologized to the irate parent by explaining that it was an accident, caused by a misplaced switch.

THE western grain crop is immense, and within the next few months a large portion of it will be transported to market; yet we do not hear that any of the great east and west lines propose to use the Prosser Cylinder Car for such purpose. In view of the extraordinary claims put forth in behalf of this new method, on account of the greatly diminished dead weight and the improvement in the quality of the grain during transit, it may be pertinent to inquire why it is not brought more conspicuously to the front in these days of big crops and cheap transportation. If there is no suitable return freight, the cylinders might be loaded with ballast to keep them from bouncing off the track on their way home.

Our Directory.

We note the following changes since our last issue. Readers are requested to give us prompt notice of changes when they occur:

Boston & Albany.—Mr. A. B. Underhill has been promoted from the position of Master Mechanic to that of Superintendent of Motive Power, with headquarters at Springfield, Mass. The office of Master Mechanic will be abolished Nov. 1.

Central of New Jersey.—Mr. Joseph S. Harris has been appointed General Manager. He will continue also to act as Consulting Engineer of the Lehigh Coal & Navigation Company, of which he has been Superintendent.

Chicago & Alton.—Mr. O. Vaughan has been appointed Superintendent of the Kansas City Division, vice J. H. Wood, who has been assigned to duties in the General Manager's office.

Chicago, Burlington & Quincy.—Mr. L. E. Johnson has been appointed Master Mechanic of the St. Louis Division, with office at Beardstown, Ill. He was previously Master Mechanic of the shops at Ottumwa, Ia.

Cincinnati, Hamilton & Dayton.—Mr. E. E. Dwight has been appointed Superintendent of the Dayton & Michigan leased road, in place of J. H. Weller, resigned.

Corning, Cowanesque & Antrim, and Syracuse, Geneva & Corning.—Mr. Andrew Beers succeeds Mr. H. A. Horning as Purchasing Agent of these roads.

Des Moines & Fort Dodge.—Mr. E. A. Avery has been appointed Master Car Builder, vice Mr. R. Merrill, who takes charge of the bridge building of the line.

Frankfort & Kokomo.—Mr. J. B. Clark has been appointed Superintendent, and Mr. E. H. Andress Purchasing Agent.

Gulf, Colorado & Santa Fe.—The office of General Superintendent, recently held by Mr. O. H. Dorrance, has been abolished, and Mr. John Sealey has been appointed General Manager.

Manhattan Elevated.—Mr. M. K. King has resigned the position of Purchasing Agent to accept that of General Manager of the Elizabeth City & Norfolk R. R.

Memphis & Little Rock.—Mr. E. K. Sibley has been appointed General Superintendent, and James Harrington General Manager, vice Rudolph Fink, resigned.

Missouri, Iowa & Nebraska.—Mr. W. F. Merrill is appointed General Superintendent. He is also Chief Engineer and Superintendent of the Toledo, Peoria & Warsaw, both roads being controlled by the Wabash, St. Louis & Pacific.

Pittsburgh & Western.—Capt. J. A. Banner has been appointed Superintendent, vice Col. Worth, resigned.

Savannah & Memphis.—Mr. G. J. Foreacre (General Manager of the Atlanta & Charlotte Air Line) is now General Manager of this road. W. S. Greene, formerly Receiver and Superintendent, is no longer connected with the road.

San Francisco & North Pacific.—Mr. H. C. Whiting has been appointed Superintendent, in place of A. A. Bean, resigned.

Selma, Rome & Dalton.—Mr. Rudolph Fink, late of the Memphis & Little Rock, has been appointed General Manager by the purchaser.

South Pacific Coast.—Mr. F. W. Bowen has been appointed Superintendent. He was, some time ago, Superintendent of the Sacramento Division of the Central Pacific, and was latterly in the pay department of that company.

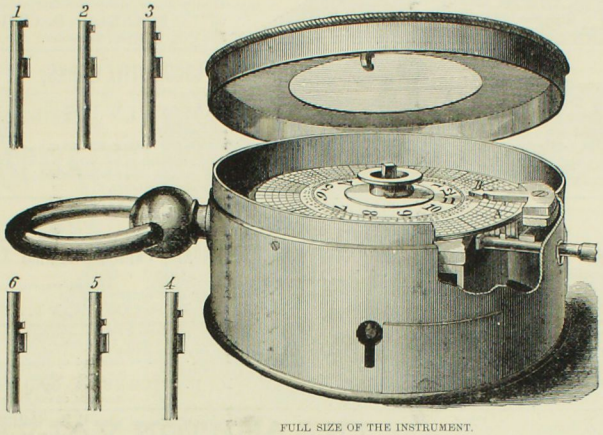
JAMES T. ALLEN,

238 and 235 Canal St., New York.

Dealer in all kinds of Foreign and Domestic Veneers, adapted to car and cabinet work. Panels for car work, got out to sizes, furnished in any kind of woods.

BUERK'S

WATCHMAN'S TIME DETECTOR.



FULL SIZE OF THE INSTRUMENT.

Patented Jan. 1, 1861, June 6, 1865, Nov. 3, 1874, and Aug. 29, 1876.

The above engraving is a view of a Time Detector, which is carried about by the watchman to all the different stations to be guarded. At each station is a small key, securely fastened to prevent his taking it with him. The watchman goes from station to station, takes the key fastened there, inserts it into the clock, gives it one turn, and goes on to the next, or to any other station, for he is not bound to go in regular order. By this, it follows that a perfect record will be kept of each operation.

The broken-out portion of the watch shows the mechanism which operates the pin which pricks the paper. At *A* there is a number of sliding bars which connect with the pricking points, so that, by turning the key, the ward on it strikes a certain bar, and penetrates the dial-paper, *B*. By that act a small hole is made in the paper, which tells what time the man appeared at each station; how often he came there; how long he stopped; how long it took him to go from one to another; whether he went in regular order or not; in short, it gives a complete record of his night's work.

The small figures are views of different keys. A flange on the side of the key prevents it from being turned unless it is inserted quite into its place; so that the key used for one station cannot be used to make the mark for a key at another, nor, indeed, can any key except a perfect duplicate be made to do it. Any attempt on the part of the watchman to evade his duty by counterfeiting keys may be effectually baffled by occasionally changing keys from one station to another. An indefinite number of stations can be served.

The watch is wound, set and closed every day by the proprietor or superintendent, and the box locked with a key which he keeps, so that the register within is unseen by, and out of the reach of, the watchman who carries it. In the morning, when the Detector is returned to the superintendent, the graduated disk of paper may be removed from its position and filed away as a permanent record, while a new disk is applied for succeeding records.

The great demand for BUERK'S DETECTOR has prompted some parties to copy the instrument, make some alterations in the arrangement, and put them on the market, to the disappointment of purchasers who want a perfect article, and to the detriment of the inventor.

Four cases against infringers have been decided in my favor, and it would be well before purchasing Portable Watch-Clocks or Time Detectors, to ascertain whether they are sold under my patent or not, as I believe all others to be infringements on my patent. Any parties selling, buying, or using the same, except under my name, will render themselves liable to prosecution.

Patented January 1st, 1861, June 6th, 1865, November 3d, 1874, and August 29th, 1876.

J. E. BUERK.

N. B.—The appeal of IMHAEUSER against the decision of the Circuit Court of the United States, Southern District of New York, for infringing on my Patent, was decided against him at the last term of the Supreme Court of the United States, at Washington, D. C.
MAY, 1880.

The instrument is complete in itself, portable, and as reliable as the best lever watch.

It is not so likely to become disarranged in its works as a watch, because the parts are stronger. But when it needs cleaning, any good watchmaker can adjust it, its mechanism being simple.

It requires no fixtures or wires communicating from room to room, as is the case with the ordinary Watch-Clocks; a small, inexpensive stationary key is alone required at each station.

Its use is not restricted to a single building; and places such as Railroad Tunnels, Shops, Yards, etc., can be guarded, that it would be impossible to guard with any other instrument.

The DETECTOR is used extensively by large Manufacturing Establishments, Railroad Companies, Hotels, Public Buildings, Asylums, Hospitals and Warehouses all over the world, from whom numerous testimonials have been received.

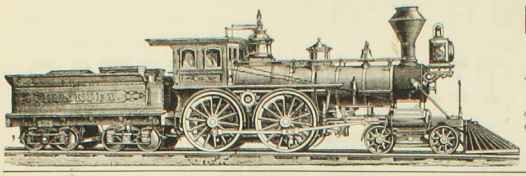
N. B.—Parties purchasing these Clocks should test them sufficiently in the counting-room or office, as they will not be taken back after having been injured by the watchman through carelessness.

All communications promptly attended to.

Address:

J. E. BUERK, Proprietor,
230 WASHINGTON STREET, BOSTON.

P. O. Box No. 979. ROOM 6.



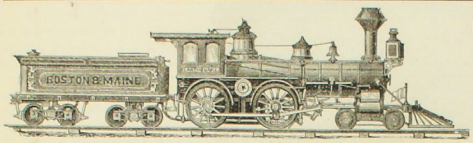
HINKLEY LOCOMOTIVE COMPANY.

(ESTABLISHED IN 1839.)

439 ALBANY ST., BOSTON, MASS.

This Company, having been reorganized, is prepared to receive orders for Locomotive Engines and Tenders, Boilers and Tanks, and to execute such orders promptly at fair prices for the best work.

FRANKLIN D. CHILD, Superintendent.
GREELY S. CURTIS, Treasurer.



MANCHESTER LOCOMOTIVE WORKS,

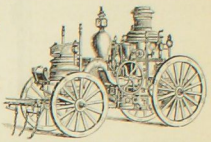
MANUFACTURERS OF

LOCOMOTIVES

AND THE

AMOSKEAG STEAM FIRE-ENGINE.

JOHN A. BURNHAM, President.
WM. G. MEANS, Treas., Boston, Mass.
ARETAS BLOOD, Agent, Manchester, N. H.

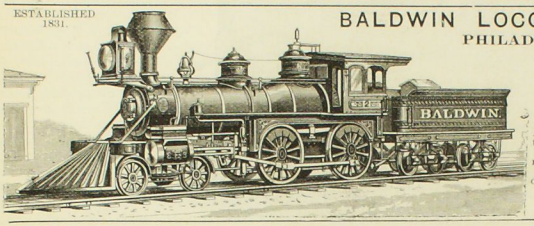


ESTABLISHED 1831.

BALDWIN LOCOMOTIVE WORKS,

PHILADELPHIA, PA.

Annual Capacity, 500.



BURNHAM, PARRY, WILLIAMS & CO., PROPRIETORS,

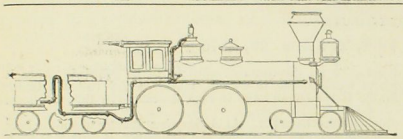
GEO. BURNHAM,
CHAS. T. PARRY,
EDWARD H. WILLIAMS,
MANUFACTURERS OF
WM. P. HENSZEY,
EDW. LONGSTRETH,
JOHN H. CONVERSE.

LOCOMOTIVE ENGINES,

Adapted to every variety of service, and built accurately to standard gauges and templates. Like parts of different engines of same class perfectly interchangeable. Passenger and Freight Locomotives, Mine Locomotives, Narrow Gauge Locomotives, Steam Street Cars, etc.

Illustrated Catalogues furnished on application of customers. All work thoroughly guaranteed.

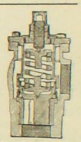
R. E. RICKER & CO., New York Agents,
Rooms 34, 35 and 36, Coal and Iron Exchange Building.



THE ASHTON VALVE CO.,

271 Franklin Street, Boston, Mass.

The Ashton Blow-back Safety-valve is constructed so as to conduct the escape steam which is blown off back to the tender, or to the smoke-box and up the chimney. By this arrangement the heat of the escape steam, instead of being wasted as it is when an ordinary safety-valve blows off, is communicated to the cold water in the tender. This not only results in an important economy, but it renders the escaping steam noiseless, and the increase of temperature of the water has a tendency to deposit some of its impurities before it is pumped into the boiler. It thus *stops the noise ! saves fuel ! and all engines steam better and faster, and do more effective work with these valves* than with those in ordinary use!



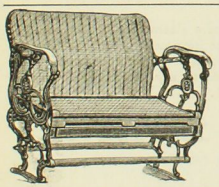
EAMES VACUUM BRAKE CO.,

RAILWAY TRAIN BRAKES,

P. O. Box 2878. SALES OFFICE, 15 GOLD ST., NEW YORK. Represented by THOMAS PROSSER & SON

THE EAMES VACUUM BRAKE is confidently offered as the most efficient, simple, durable, and cheapest power Brake in the market.

CAN BE SEEN IN OPERATION UPON OVER FIFTY ROADS.



☞ NEW "COMBINATION"

RATTAN SPRING CAR SEAT.

THE STRONGEST AND MOST DURABLE SEAT IN THE MARKET.
Made of Woven Cane, or Rattan, Cemented to Canvas.

STEAM-CAR REFERENCES:
New York Central R.R.
Phila., Wil. & Baltimore R.R.
Illinois Central R.R.
Staten Island R.R.
And many others.

STREET-CAR REFERENCES:
J. G. Brill & Co., Philadelphia.
Chestnut & Walnut R.R. "
Fourth & Eighth St. R.R. "
Union R. R., Boston.
And many others.

MADE ONLY BY

HALE & KILBURN M'F'G CO.,
48 and 50 North 6th Street, - - Philadelphia.

☞ SEND FOR PARTICULARS AND SAMPLES.

Section for Street Cars.

BUY

CARTER'S INK

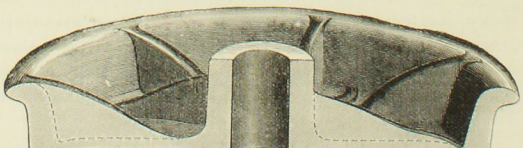
AND

MUCILACE.

NO. 36 DEY STREET, NEW YORK.

BALTIMORE CAR WHEEL COMPANY.

W. S. G. BAKER, President. J. M. LAWFORD, Secretary.



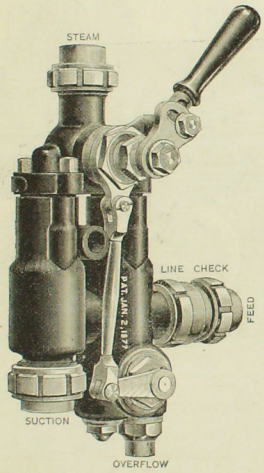
Manufacture Chilled Wheels of all patterns and sizes for every service, by an improved method of casting, securing a deep and uniform chill, with soft plate and round form, free from strain and tread defects.

Works, Corner Essex and Burke Streets, Canton, Baltimore.

FAIRBANKS'
STANDARD SCALES,
311 Broadway.
FULL ASSORTMENT. EVERY SCALE WARRANTED.
FAIRBANKS & CO.,
311 Broadway, N. Y.

PITTS' JOURNAL BEARINGS.
Non-heating, Self-adjusting, Durable, Cheaper than the Cheapest. Equal to any in market. Royalty paid under existing patents. Send for Samples.
A. V. PITTS & CO.,
7 and 9 South Jefferson Street, Chicago.

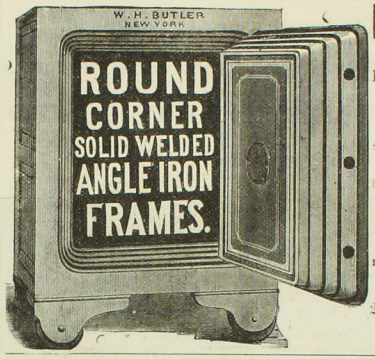
THE IMPROVED
HANCOCK INSPIRATOR
FOR
LOCOMOTIVES.



Send for Circulars and Full Particulars, to
The Hancock
INSPIRATOR CO.,
34 BEACH STREET,
Boston, Mass.

ENGINEERING:
AN ILLUSTRATED WEEKLY JOURNAL.
CONDUCTED BY
WM. H. MAW AND JAMES DREDGE.
American Subscription, postage paid..... $10.50.
ENGINEERING is a weekly paper, each number containing, besides advertisements, from 20 to 24 pages of original articles on subjects relating to the various branches of Civil, Mechanical, Mining, and Military Engineering, profusely illustrated by engravings of the first class.
The MOST IMPORTANT AMERICAN ENGINEERING STRUCTURES are illustrated and described by ENGINEERING in greater detail than by any other journal.
ENGINEERING devotes much space to the description of all processes connected with the manufacture of Iron and Steel, and to the illustrations of the best examples of Iron Works and their Plant; and in its pages are found reports of the proceedings of, and papers read before, all the leading professional institutions. Sole Agent for the United States,
MR. LENOX SMITH, 56 Broadway, New York.

GEO. WESTINGHOUSE, JR., PRESIDENT. T. W. WELSH, SUPERINTENDENT. JOHN CALDWELL, TREASURER. W. W. CARD, SECRETARY. H. H. WESTINGHOUSE, GENERAL AGENT.
THE WESTINGHOUSE AIR-BRAKE COMPANY,
PITTSBURGH, PA., U. S. A.,
MANUFACTURERS OF THE
WESTINGHOUSE AUTOMATIC BRAKE,
WESTINGHOUSE LOCOMOTIVE DRIVER BRAKE,
VACUUM BRAKES (Westinghouse & Smith Patents),
WESTINGHOUSE AIR BRAKE.
Particular attention is called to the "AUTOMATIC" and "LOCOMOTIVE DRIVER BRAKES," now being tested and adopted by the prominent lines.
With the "DRIVER BRAKE" the engineer can handle an ordinary freight train better than with brakemen. The saving in car wheels and wages will therefore be apparent. On shifting or yard engines it is invaluable.
The "AUTOMATIC" has proved itself to be the most efficient train and safety brake known. Its application is instantaneous; it can be operated from any car in the train, if desired, and should the train separate, or a hose or pipe fail, it applies automatically. A GUARANTEE is given customers against loss from PATENT SUITS on the apparatus sold them.
FULL INFORMATION FURNISHED ON APPLICATION.



BUTLER'S SAFES
ROUND CORNER,
FIRE AND BURGLAR
PROOF.
ESTABLISHED 1850.
SAFES FOR RAILROAD TICKET OFFICES,
Fire-Proof Messenger Boxes,
FOR RAILROAD AND EXPRESS COMPANIES.
ESTIMATES AND DRAWINGS FURNISHED.
EXTRA SECURE
LOCKS
For Dwelling, Bank and Store Doors.
W. H. BUTLER,
291 BROADWAY, NEW YORK,
GENERAL AGENT FOR
DIEBOLD SAFE AND LOCK CO.

NORTHWESTERN ENGRAVING CO.

WOOD AND PHOTO ENGRAVING

JOHN W. WESTON, MANAGER. 182 & 184 DEARBORN ST. CHICAGO.

Rules for the Interchange of Freight Cars

AS REVISED AT A

MEETING OF RAILROAD SUPERINTENDENTS AND MASTER CAR BUILDERS,

Held at Detroit, June 8, 1880,

MAY BE HAD AT THE RATE OF

$3.50 per hundred copies; $2.00 for fiftv; or $1.00 for twenty-five

AT THE OFFICE OF THE

NATIONAL CAR-BUILDER

5 Dey Street, New York.

THE SCREW LEVER DUMP CARS,

Especially for Dumping Long Gondola, Flat and Grain Cars.

PATENTED BY MATTHEW VAN WORMER, DAYTON, OHIO.

THE NEW ENGLAND CAR COMPANY

SIMEON BROWNELL, Managing Agent. FRANK BROWNELL, Treasurer.

Sole Owners for New England, and Sole Agents for the United States.

No. 48 CONGRESS STREET, BOSTON, MASS., U. S. A.

Fig. 1

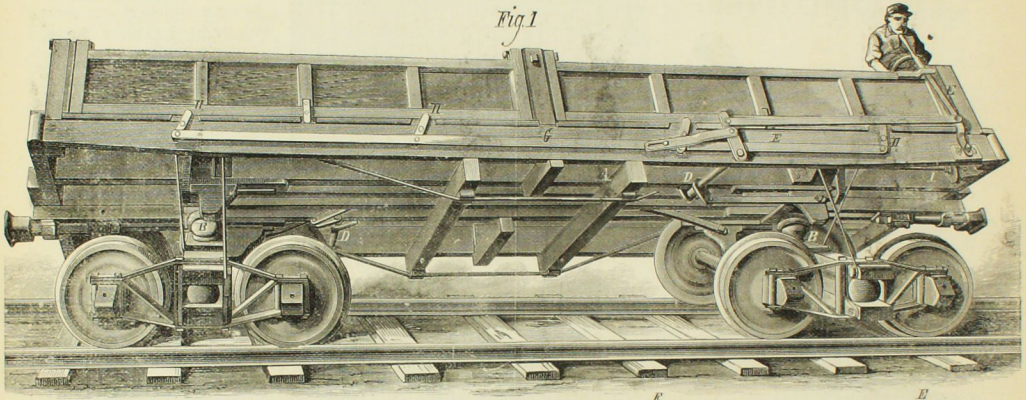


Fig. 2

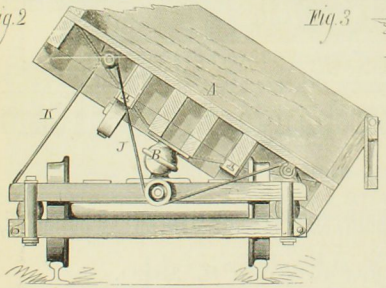
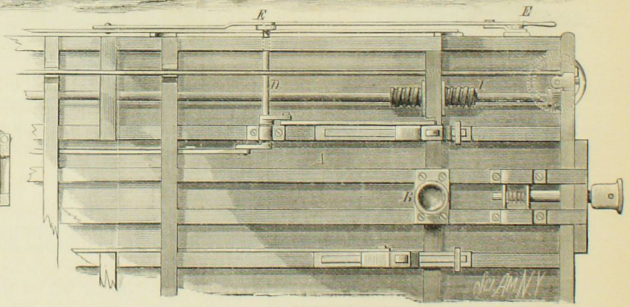


Fig. 3



NEW DUMP CAR.

We present herewith engravings of a new dumping car, patented by Mr. Matthew Van Wormer, of Dayton, O., and now being introduced by the New England Car Company, of 48 Congress street, Boston, Mass. This car posesses many points of novelty which are covered by separate patents. It has been improved from time to time until, as it now stands, it appears to fulfill all the requirements. In its construction it is as simple as well can be when all of its functions are considered. It is a full-sized gondola car, and capable of running with the same steadiness and security as the ordinary cars of the same size, while at the same time it is as perfectly manageable as a common dumping-wagon.

Fig. 1 shows the entire car in perspective while being dumped; fig. 2 is a vertical transverse section, taken just in front of one of the trucks; and fig. 3 is an inverted plan view, showing the apparatus for moving the side bearings.

This operation removes the side bearings of one side of the car and puts it in position to be dumped. Upon the outer end of the rock shaft there is a lever, E, which is connected with the lever, F, at the side of the car near its end. The lever E is connected with a bar, G, extending along the side of the car, and pivoted to four or more lever catches, H, which hold the side doors of the car in position to retain the load. By this arrangement of the levers and their connections the car doors may be released and the supports, B, moved, making the car ready to dump. The apparatus for dumping the car is very simple and effective, and capable of holding the car platform at any desired angle. It consists of a long shaft, I, extending along the body of the car, and provided at one end with a worm-wheel, which is engaged by a worm on a vertical shaft extending upward through the platform of the car, and provided with a lever or wheel by which it may be turned.

Upon drums carried by the shaft, I, are two drums, upon each of which are wound two chains, J K. The chain, J, runs downward around a sheave on the truck timber, thence upward over a sheave on the car body, then downward to the end of the truck timber, where it is secured. The chain, K, runs directly down to the truck timber. By turning the shaft, I, in one direction the car is dumped on one side of the track, and by turning it in the other direction the load is discharged on the opposite side of the track. This result is secured by winding one of the chains, I J, while the other is unwound. The worm-gear affords ample leverage for operating the shaft, I, so that the car may be dumped by one man standing on the platform.

The merits of this dumping car will be understood and appreciated by railroad engineers, superintendents and managers, who are familiar with the imperfections of the ordinary cars.

Any further information in regard to this invention may be obtained by addressing the New England Car Company, 48 Congress street, Boston, Mass. Mr. Simeon Brownell is general manager and sole agent for the United States.

Established 1840.

T. P. HOWELL & CO.,

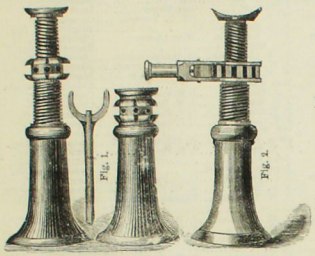
MANUFACTURERS OF

Leather of Every Description.

Salesroom: 77 Beekman Street, New York.

FACTORY: NEWARK, N. J.

BALL'S PATENT TELESCOPE JACK.



HOT AND COLD PUNCHED NUTS,

Bolts, Lag Screws, and Washers,

BELTING,

Packing Hose Rubber Springs Car Trimmings,

STEAM PUMPS.

ALBERT BRIDGES,

MANUFACTURER OF AND DEALER IN

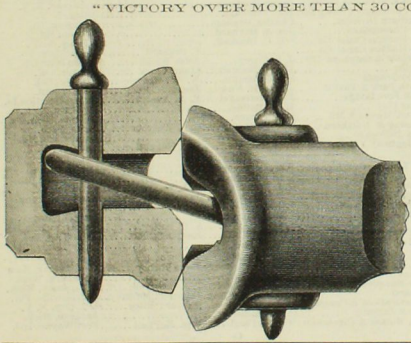
Railway and Mining Supplies and Machinery,

NO. 46 CORTLANDT STREET,

P. O. Box 2843, NEW YORK.

SAFFORD'S SAFETY DRAW-BAR.

"VICTORY OVER MORE THAN 30 CONTESTANTS.



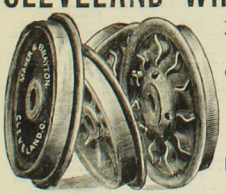
Victory over more than 30 Self-Couplers in the Master Car-Builders' Convention of June, 1876. Also indorsement for safety in coupling by the Yard Masters, in their Convention, June, 1877, and by 300 others who were unable to attend the Convention, and 300 railroad officials who are resident in 26 States, and who admit its superiority over any other yet produced. Try 30 free of royalty, and see for yourself! Pattern free, and no change in timbers or connections. Those made by Wilson, Walker & Co., Pittsburgh, Pa., *will save 200 per cent. in repairs*, and give double life service over *old styles* of wrought iron. About 43,000 in use on 146 railroads. The *saving in repairs* by using *my invention* is from 20 per cent. to 80 per cent. as per *report of many officers*.

J. B. SAFFORD,

Inventor and Sole Proprietor,

BUFFALO, N. Y.

CLEVELAND WHEEL AND FOUNDRY WORKS,



MAHER & BRAYTON, Proprietors.

MANUFACTURERS OF

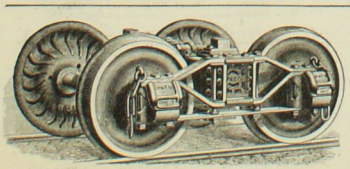
CAR, ENGINE, TRUCK AND TENDER WHEELS, RAILROAD, ROLLING-MILL AND MACHINERY CASTINGS, AND STREET RAILROAD WHEELS AND TURNOUTS.

ALSO,

CHILLED-FACED RAILROAD FROGS.

Office: 20 Carter St. Works: Corner Carter and Collins Sts.

CLEVELAND, O.



THE THIELSON TRUCK CO.,

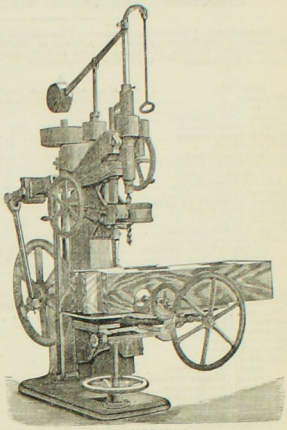
142 DEARBORN ST.,

CHICAGO, ILL.

We respectfully refer you to the following railroads using this Truck:

R. & D.; K. C., St. J. & C. B.; M. R., F. S. & G.; C., B. & Q.; C., A. & St. L.; A., T. & S. F.; A. & N.; K. P.; F. & P. M.; M. C.; St. L., I. M. & S.; B. & M. R. (in Neb.); D. P.; L., L. & G.; C. V.; S. C.; Baldwin Locomotive Works.

WOOD-WORKING MACHINERY



FOR

Railroad Shops, Car-Builders, Planing-Mills, Bridge Builders, Sash, Door and Blind Makers.

SEND FOR NEW CATALOGUE

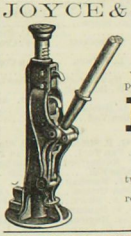
GOODELL & WATERS,

THIRTY-FIRST AND CHESTNUT STS., PHILADA., PA

JOYCE & CRIDLAND,

900 E. Third St.,

DAYTON, O.



We represent here a cut of our Compound

Lever Jack,

OF GREAT POWER.

Its capacity is 12 to 15 tons with two men.

We make but one size, a two-inch round bar.

Height, 29 inches.

PRICE - $30.

THE OLDEST HOUSE, ESTABLISHED 1841

WOOD-WORKING

MACHINERY

For Every Description of Work.

CAR MACHINERY A SPECIALTY.

Latest Improved and Best in Use.

MANUFACTURED BY

C. B. ROGERS & CO.

MANUFACTORY: NORWICH, CONN.

WARE-ROOM: 109 LIBERTY ST., New York.

HOPKINS'

PATENT LEAD-LINED

SELF-FITTING

JOURNAL BEARINGS,

AND

MENEELY'S

PATENT BELL-METAL ENDED

Journal Bearings,

FOR REDUCING LATERAL WEAR.

MADE BY

GEO. R. MENEELY & CO

WEST TROY, N. Y.

Directory of Master-Mechanics and Master Car-Builders

THROUGHOUT THE UNITED STATES AND CANADA.

REFERENCES.—* Mechanical Engineer. † Mechanical Superintendent. ‡ General Master Mechanic. †† Gen. Master Car-Builder. § Master of Machinery. ‖ General Foreman. ** Supt. of Machinery. §§ Supt. of Motive Power and Machinery. ‡‡ Supt. Cars and Buildings. ¶ Supt. of Equipment. ¶¶ Ass't Supt. of Equipment.

A

Railroad.	*Master-Mechanic.*	*Master Car-Builder.*	*Residence.*
Adirondack	Jacob Myers	James J. Traver	Saratoga, N. Y.
Alabama Central	Simon Gay	James Owens	Selma, Ala.
Alabama Great Southern	§§John McVey		Chattanooga, Tenn.
Albany & Susquehanna	§§R. C. Blackall	R. C. Blackall	Albany, N. Y.
Albany & Susquehanna	C. A. Jones	J. R. Skinner	Oneonta, N. Y.
Arkansas Midland	J. B. Johnson	J. B. Johnson	Helena, Ark.
Ashtabula & Pittsburg	Geo. J. Parkins	Wm. Marquis	Allegheny City, Pa.
Atchison, Topeka & Santa Fe, Western Division	§§Geo. Hackney	Geo. Hackney	Topeka, Kan.
Atchison & Nebraska	A. C. Stiles		Pueblo, Col.
Allegheny Valley	T. D. Volk	T. A. H. Berkey	Allegheny City, Pa.
Atlanta & Charlotte Air-Line	G. W. Glass	R. Gunning	Pittsburgh, Pa.
Atlanta & West-Point	C. D. Wall	C. D. Wall	Atlanta, Ga.
Atlanta & West-Point	Wm. Rushton		Atlanta, Ga.
Atlantic & North Carolina	Basil Manly	R. D. Cole	Newnan, Ga.
Atlantic, Mississippi & Ohio, Norfolk & Peter. Division	J. T. Robinett	J. T. Robinett	Petersburg, Va.
Virginia & Tenn. Division	F. Sterk	W. A. Morgan	Lynchburg, Va.
Western Division	A. C. Stiles		Pueblo, Col.

B

Baltimore & Ohio	§John C. Davis	J. S. Shryack	Baltimore, Md.
Baltimore & Ohio	A. J. Cromwell	James H. Mill	Baltimore, Md.
Baltimore & Ohio	Wm. Edwards		Martinsburg, Va.
Baltimore & Ohio	I. N. Kalbaugh		Piedmont, Va.
Baltimore & Ohio	E. L. Weisgerber		Grafton, W. Va.
Baltimore & Ohio	Robert Maxwell		Cumberland, Md.
Baltimore & Ohio	Chas. Hirsch		Wheeling, W. Va.
Baltimore & Ohio, Central Ohio Division	S. B. Crawford		Parkersburg, W. Va.
Ohio & Chicago Division	O. R. Perkins		Zanesville, O.
Central Ohio Division	§Sam. Houston		Newark, O.
Central Ohio Division	James Stewart		Newark, O.
Central Ohio Division	H. M. Ingler		Bellaire, O.
Lake Erie Division	And. Beckert		Sandusky, O.
Chicago Division	W. Y. Johnston		Garrett, Ind.
Chicago Division	F. J. Gunther		Chicago Junc., O.
Chicago Division	Geo. Wilson		Kingston, Ill.
Pittsburg Division	John E. Sampsel		Connellsville, Pa.
Baltimore & Potomac	§§R. H. Soule		Baltimore, Md.
Bath & Hammondsport	Allen Wood		Hammondsp't, N. Y.
Bedford, Springville, O. & Bloom'd.	Capt. Geo. Elliott		Bedford, Ind.
Bellefonte & Snow Shoe	H. D. Landis	H. D. Landis	Bellefonte, Pa.
Bennington & Rutland	G. W. Blanchard		Rutland, Vt.
Boston & Albany	§§A. B. Underhill		Springfield, Mass.
Boston & Albany		F. D. Adams	Allston, Mass.
Boston & Albany	T. B. Purvis		Greenbush, N. Y.
Boston & Providence	George Richards	J. E. Doran	E. Albany, N. Y.
Boston, Barre & Gardner	Chas. F. Brigham	John Lightner	Roxbury, Mass.
Boston, Concord & Montreal	Ralph Adams	L. D. Pickering	Worcester, Mass.
Boston & Maine	Wm. Smith		Lake Village, N. H.
Boston & Maine		D. C. Richardson	Boston, Mass.
Boston & Lowell	J. F. Crockett	J. F. Crockett	Lawrence, Mass.
Boston & New York Air-Line			Boston, Mass.
Boston, Revere Beach & Lynn	J. L. Folsom	John Coghlan	New Haven, Conn.
Brunswick & Albany			Boston, Mass.
Burlington & Missouri River in Neb.	D. Hawksworth	D. Hawksworth	Brunswick, Ga.
Burlington, Cedar Rapids & Nor.	R. W. Bushnell		Plattsmouth, Neb.
Burlington & Southwestern		A. B. Allen	Cedar Rapids, Ia.
Buffalo & Southwestern	J. G. Hubbard		Farmington, Ia.
Buffalo, New York & Philadelphia	Allen Vail		Buffalo, N. Y.
			Buffalo, N. Y.

C

Cairo & St. Louis	**G. B. Simonds	G. B. Simonds	E. Carondelet, Ill.
Cairo & Vincennes	A. Van Tuyl	A. Van Tuyl	Carmi, Ill.
California, Pacific & Northern	D. Rutherford	D. Rutherford	So. Vallejo, Cal.
Camden & Atlantic	Rufus Hill	S. Wills	Camden, N. J.
Canada Central	H. J. Marshall		Brockville, Can.
Canada Southern and Branches, Canada Division	*John Ortton	††John Ortton	St. Thomas, Ont.
U. S. Division	W. A. Short	Robert Potts	St. Thomas, Ont.
Carolina Central	O. F. Dunbar		Grosse Isle, Mich.
Catasauqua & Fogiesville	§Jas. Maglenn	S. R. Ethridge	Laurinburg, N. C.
Central of Georgia	Thos. E. Evans	Chas. J. Holbach	Catasauqua, Pa.
Atlanta Division	D. D. Arden		Savannah, Ga.
Central of New Jersey	D. M. Gugel	Jas. A. Knight	Macon, Ga.
Lehigh & Susquehanna Div.	Wm. Woodcock	George Hackett	Elizabeth, N. J.
Central of Iowa	L. C. Brastow	L. C. Brastow	Wilkesbarre, Pa.
Central Pacific	M. C. Wheeler	T. L. Seevers	Marshalltown, Ia.
Western Division	‡A. J. Stevens	††Benj. Welch	Sacramento, Cal.
Central Pacific	Geo. D. Welch	‖W. B. Ludlow	Oakland, Cal.
Visalia Division	S. Johnson	‖J. J. Turner	Sacramento, Cal.
Sacramento & Oregon Div.	M. W. Cooley	Phi. Douglass	Tulare, Cal.
Truckee Division	Geo. Gregg	Wm. McPherson	Sacramento, Cal.
Humboldt Division	W. F. Smith	J. C. Doughty	Wadsworth, Nev.
Salt Lake Division	Jas. Lamb		Carlin, Nev.
Salt Lake Division		‖A. Sherburne	Terrace, Utah.
Central Vermont	§§J. M. Foss		Ogden, Utah.
New London & Northern Div.	I. W. Dow	S. O. Banks	St. Albans, Vt.
Rutland Division	N. L. Davis	N. L. Davis	New London, Conn.
Chesapeake & Ohio	§John McFarland	J. N. King	Rutland, Vt.
Chesapeake & Ohio	Tho. L. Chapman	H. C. Bassinger	Richmond, Va.
Cheraw & Darlington	John Bissett	W. H. Day	Huntingdon, W. Va.
Cherokee	C. E. Scruton		Florence, S. C.
Cheshire	F. A. Perry	‖A. E. Howard	Cedartown, Ga.
Charlotte, Columbia & Augusta		J. C. Troeger	Keene, N. H.
Charleston & Savannah	H. A. Ulmo	J. D. Murphy	Columbia, S. C.
Chicago & Pacific	James Peony	C. N. Code	Charleston, S. C.
Chicago & Northwestern, Wis., Mad. & Mill. Divis.	** Geo. W. Tilton	††William Campbell	Chicago, Ill.
Galena Division			Chicago, Ill.
Iowa Division	J. O. Chapman	H. L. Preston	Chicago, Ill.
Peninsula Division	Geo. White		Clinton, Ia.
Winona & St. Peters Div.	W. A. Scott	W. A. Scott	Escanaba, Mich.
Chicago & Alton	§§Wm. Wilson		Winona, Minn.
Kansas City & St. Louis Div.	J. C. Morse		Bloomington, Ill.
Chicago, Burlington & Quincy, Galesburg Division	§§H. B. Stone	*J. Christiansen	Mexico, Mo.
Iowa Division	Robert Colville		Aurora, Ill.
Iowa Division	Joel West		Galesburg, Ill.
St. Louis Division	C. W. Eckerson		Burlington, Ia.
Chicago & Springfield	H. Whiting		Creston, Ia.
Chicago, Clinton, Dubuque & Minn.	W. H. McKenna		Beardstown, Ill.
Chicago, Rock Island & Pacific, Kookuk & Des Moines Div.	E. Smedley	E. Smedley	Clinton, Ill.
Southwestern Division	†T. B. Twombly	B. K. Verbryck	Dubuque, Ia.
Chicago & West Michigan	S. W. Wakefield	Henry Kummer	Chicago, Ill.
Chicago & Eastern Illinois	R. O. Carscadin		Keokuk, Iowa.
Chicago & Iowa	Russell Booth		Trenton, Mo.
Chicago & Grand Trunk	Allen Cooke	Allen Cooke	Muskegon, Mich.
	H. S. Bryan		Danville, Ill.
	*K. Blackwell	Geo. W. Prescott	Aurora, Ill.
			Battle Creek, Mich

Railroad.	*Master-Mechanic.*	*Master Car-Builder.*	*Residence.*
Chicago, Milwaukee & St. Paul	J. M. Lowry		Milwaukee, Wis.
La Crosse & P. Du. Ch. Div.		John Bailie	Milwaukee, Wis.
Northern Division		Wm. E. Kittredge	Milwaukee, Wis.
Iowa & Minn. Division	J. O. Pattie		Minneapolis, Minn.
Racine & S. W. est Div.	John Taylor	E. A. Eddy	Racine, Wis.
Sioux City & Dak. Div.	J. H. Moulton		Yankton, Dak.
Southern Minnesota Div.	J. B. Henney	J. B. Henney	Hokah, Minn.
Chicago & Paducah	T. J. Grosh	T. J. Grosh	Streator, Ill.
Chicago, Pekin & Southwestern	A. R. Overton		Pekin, Ill.
Chicago, Pekin & Southwestern		F. Shields	Joliet, Ill.
Chicago, St. Louis & New Orleans	**W. H. Purdy		Streator, Ill.
Chicago, St. Louis & New Orleans	E. D. Anderson		McComb City, Miss.
Chicago, St. Louis & New Orleans	J. M. Keith		McComb City, Miss.
Chicago, St. Louis & New Orleans	J. F. White		Jackson, Tenn.
Chicago, St. Paul & Minneapolis	Matt Ellis	J. C. Fischer	Water Valley, Miss.
Cincinnati, Wabash & Michigan	S. B. Tinker	S. B. Tinker	Hudson, Wis.
Cincinnati, Hamilton & Dayton, Indianapolis Division	James Eckford	W. H. H. Allison	Wabash, Ind.
	Edward Moore		Cincinnati, O.
Cincinnati, Lafayette & Chicago	J. B. Morgan	J. B. Morgan	Indianapolis, Ind.
Cincinnati, Richmond & Chicago	Wesley S. Brewer		Lafayette, Ind.
Cin. Rockport & So. Western	B. W. Smith	J. H. Bauman	Richmond, Ind.
Cincinnati, Sandusky & Cleveland	Jos. L. Porter		Rockport, Ind.
Cincinnati Southern			Sandusky, O.
Cleve., Col., Cin. & Indianapolis, Indianapolis Division	J. Ivinson	Geo. Butler	Ludlow, Ky.
	A. R. McAlpine	††L. S. Young	Cleveland, O.
Columbus & Cin. Division	F. G. Kaufholz	Wm. Cleave	Bright wood, Ind.
Cleveland & Marietta	Tho. Robertson		Cleveland, O.
Cleveland & Pittsburg	N. E. Chapman	A. Steinbrunner	Marietta, Ohio.
Cleve., Mt. Vernon & Columbus	J. W. Holloway	J. W. Holloway	Cleveland, O.
Cleve., Tusc. Valley & Wheeling	W. F. Turreff	Geo. H. Pratt	Akron, O.
Cobourg, Peterboro & Marmora	Wm. Polson		Black River, O.
Columbus & Hocking Valley	I. G. Hutchins	J. M. Rockafield	Cobourg, Canada.
Columbus & Toledo	I. G. Hutchins	J. M. Rockafield	Columbus, O.
Concord	J. T. Gordon	J. T. Gordon	Columbus, O.
Concord & Portsmouth	J. T. Gordon	J. T. Gordon	Concord, N. H.
Concord & Claremont	**J. N. Lauder		Concord, N. H.
Connecticut River	§Wm. H. Stearns	R. Hitchcock	Concord, N. H.
Connecticut Valley	S. E. Brewer	S. E. Brewer	Springfield, Mass.
Connecticut Western	John C. Barton		Hartford, Conn.
Conn. & Passumpsic Rivers	John R. Hubbard		Hartford, Conn.
Corning, Cowanesque & Antrim	O. C. Patchell	O. C. Patchell	Lyndonville, Vt.
Cumberland Valley	W. F. Turreff		Corning, N. Y.
Cumberland & Pennsylvania	N. W. Howson	Nathan Binnix	Mt. Savage, Md.

D

Dak. So. & Sioux City & Pembina	J. H. Moulton	J. H. Moulton	Yankton, Dak.
Danbury & Norwalk	N. M. George	N. M. George	Danbury, Conn.
Danville & Southwestern	R. La Baldwin		Danville, Ill.
Davenport & Northwestern	H. E. Woods		Davenport, Ia.
Dayton & Union	H. E. Woods		Dayton, O.
Dayton & Southeastern	H. S. Gordon	H. S. Gordon	Dayton, O.
Dayton & Michigan	Wm. E. Cooper		Dayton, O.
Delaware, Lackawanna & West. Morris & Essex Division	John Black		Lima, O.
	Walter Dawson	Robert McKenna	Scranton, Pa.
Morris & Essex Division	W. H. Lewis		Kingsland, N. J.
Oswego & Syracuse Division		J. W. Baker	Dover, N. J.
Utica, Chenango & Susq. Div.	James Buchanan		Syracuse, N. Y.
Bloomsburg Division	Tho. Thatcher		Utica, N. Y.
Delaware & Chesapeake	Charles Graham		Kingston, Pa.
Delaware & Hudson Canal Co.	Jos. A. Baynard		Easton, Md.
Delaware & Hudson Canal Co.	**R. C. Blackall		Albany, N. Y.
Rensselaer & Saratoga Div.		T. Orchard	Carbondale, Pa.
Denver Pacific	J. L. Corey	John Wicks	Green Island, N. Y
Denver & Rio Grande	§R. McDougall	John Clock	Denver, Col.
Denver, South Park & Pacific	N. W. Sample	N. W. Sample	Denver, Col.
Des Moines & Fort Dodge	James H. Kirk	James H. Kirk	Denver, Col.
Detroit & Bay City	John McGrayel	E. A. Avery	Grand Junction, Ia.
Detroit, Grand Haven & Mil	E. P. Bailie		Bay City, Mich.
Detroit, Lansing & Northern	Fred Parker		Detroit, Mich.
Dorchester & Delaware	G. C. Watrous	G. C. Watrous	Ionia, Mich.
Dunkirk, Allegheny Val. & Pitts	J. C. Haggett	J. C. Haggett	Cambridge, Md.
			Dunkirk, N. Y.

E

East Broad Top	Wm. C. Maynes		Orbisonia, Pa.
Eastern	J. D. Billings		East Boston, Mass.
Eastern Kentucky	D. L. Weaver	D. L. Weaver	Riverton, Ky.
E. Tennessee, Virginia & Georgia	C. A. Hodge,	Joseph Armbruster	Knoxville, Tenn.
Erie & Pittsburg	J. N. Wood	J. N. Wood	Erie, Pa.
Eureka & Palisade	J. M. Alson		Eureka, Nev.
European & North Am. (of Maine)	A. O. Bailey	A. O. Bailey	Mattawamke'g, Me.
Evansville & Terre Haute	John L. White	Joseph Stiker	Evansville, Ind.
Evansville, Terre Haute & Chic.	§§W. D. Macfarlane		Terre Haute, Ind.

F

Fitchburg	§§Geo. A. Cooledge	Enos Varney	Charlestown, Mass
Vermont & Mass. Div.	W. A. Foster		Fitchburg, Mass.
Flint & Pere Marquette	T. J. Hatswell	T. J. Hatswell	E. Saginaw, Mich.
Florida Central	James S. McElroy	James S. McElroy	Jacksonville, Fla.
Flushing, North Shore & Central	Thomas Meehan	Edward Riley	L. I. City, N. Y.
Fort Wayne & Jackson	W. Hollister		Jackson, Mich.
Fort Wayne, Muncie & Cincinnati	Wm. McPhail	Wm. McPhail	Fort Wayne, Ind.

G

Galv., Harrisburg & San Antonio	D. T. Davis		Harrisburg, Tex.
Galveston, Houston & Henderson	R. B. Small		Galveston, Tex.
Geneva, Ithaca & Sayre	J. N. Weaver		Waverly, N. Y.
Geneva, Ithaca & Sayre		E. R. Brown	Packerton, Pa.
Georgia	John S. Cook	T. M. Preval	Augusta, Ga.
Grand Haven	A. S. Parish		Allegan, Mich.
Grand Tower & Carbondale	Hugh Smith	Hugh Smith	Grand Tower, Ill.
Grand Trunk	†Herbert Wallis	Wm. McWood	Montreal, Canada.
Grand Trunk	Warren Noyes		Gorham, N. H.
Grand Rapids & Indiana		‖Duncan Menish	Portland, Me.
Grand Rapids & Indiana	J. M. Boon		Fort Wayne, Ind.
Grayville & Mattoon	J. R. Fish	J. R. Fish	Grand Rapids, Mich.
Great Western, of Canada	C. H. Cory		Mattoon, Ill.
Great Western, of Canada	*C. K. Domville		Hamilton, Can.
Green Bay & Minnesota	C. F. Hanson	Henry Childs	London, Ont.
Greenville & Columbia	‖Edw. Osborne		Green Bay, Wis.
Gulf, Colorado & Santa Fe	W. J. Parrish		Helena, S. C.
	Geo. B. Nicols	‖W. H. Martin	Galveston, Texas.

H

Hanover Junction & Gettysburg	John J. Bingley	Henry Britcher	Hanover, Pa.
Hannibal & St. Joseph	Tho. G. Gorman	Tho. G. Gorman	Hannibal, Mo.
Havana, Rantoul & Eastern	J. McCarthy		Rantoul, Ill.
Housatonic	N. Slingland	J. J. Ferris	Falls Village, Conn.
Houston, East & West Texas	‖E. Wiggin		Houston, Tex.
Houston & Texas Central	L. C. Noble	James McGee	Houston, Tex.
Huntingdon & Broad Top	Wm. Barkla		Saxton, Pa.

I

Illinois Central	**S. J. Hayes	W. B. Snow	Chicago, Ill.
Chicago Division	Henry Schlacks		Chicago, Ill.
South Division	David Oxley		Centralia, Ill.
North Division	J. B. Edams		Amboy, Ill.
Iowa Division	Thomas W. Place		Waterloo, Ia.
Springfield Division	W. H. McKenna		Clinton, Ill.
Illinois Midland	H. H. Osborn		Paris, Ill.
Illinois & St. Louis	J. H. Smith		Belleville, Ill.
Illinois & St. Louis		Charles Rothe	E. St. Louis, Ill.
Indianapolis, Cin. & Lafayette	J. S. Patterson	J. S. Patterson	Cincinnati, O.
Indianapolis, Decatur & Springfield	Pulaski Leeds		Indianapolis, Ind.
Indianapolis, Peru & Chicago	John McKenna	John McKenna	Peru, Ind.
Indianapolis & St. Louis	A. J. Sanborn	A. J. Sanborn	Mattoon, Ill.
Indiana, Bloomington & Western	C. A. Thompson	C. A. Thompson	Urbana, Ill.
International & Great Northern	John G. Conlon	‖W. H. Martin	Palestine, Tex.

Railroad.	*Master-Mechanic.*	*Master Car-Builder.*	*Residence.*
Intercolonial	†H. A. Whitney	Edw. Shaffer	Moncton, N. B.
Iron	Perry Scott	Clem. Roetling	Ironton, O.
J			
Jacksonville, Pensacola & Mobile	Jas. D. Hollister		Tallahassee, Fla.
Jeffersonville, Mad. & Indianapolis	Wm. Swanston	J. D. McIlwain	Jeffersonville, Ind.
Jacksonville, N. West. & S. East	B. J. Miller		Jacksonville, Ill.
Joplin	T. T. Butterfly	P. T. Butterfly	Girard, Kan.
Junction & Breakwater	J. A. Maguire		Lewes, Del.
K			
Kansas City, Ft. Scott & Gulf	W. D. Rowley		St. Joseph, Mo.
Kansas City, Fort Scott & Gulf	J. S. McCrum	A. N. Montier	Kansas City, Mo.
Kansas City, Lawrence & South'n	J. S. McCrum		Kansas City, Mo.
Kansas City & Eastern	J. H. Burnham	J. H. Burnham	Independence, Mo.
Kan. City, St. Jo. & Coun. Bluff	Wm. D. Rowley	Theo. Aylesbury	St. Joseph, Mo.
Kansas Central	Wm. McGill		Leavenworth, Kan.
Kansas Pacific	**John MacKenzie	T. B. Roberts	Armstrong, Kan.
Kaw Valley Division	James Long		Armstrong, Kan.
Smoky Hill Division	John B. Daily		Ellis, Kan.
Denver Division	R. McDougal	John Clock	Denver, Col.
Kentucky Central	J. R. Ledyard	J. L. Hackathorn	Covington, Ky.
Knox & Lincoln	E. Bolton	C. L. Turner	Bath, Me.
L			
Lake Erie & Western	**Everett Clemons		Fremont, Ohio.
Lake Erie & Western	†H. L. Cooper		Lafayette, Ind.
Lake Ontario Southern	Geo. Thompson	Wm. Currier	Sodus Point, N. Y.
Lake Shore & Michigan Southern	‡James Sedgley	††John Kirby	Cleveland, Ohio.
Michigan Southern Division	Geo. W. Stevens		Elkhart, Ind.
" "		Frank O. Bray	Adrian, Mich.
Toledo Division	J. M. Sanborn	W. O. Smith	Norwalk, Ohio.
Erie Division	L. O. Gassett	J. Withycombe	Cleveland, Ohio.
Buffalo Division	Edward Studley	A. C. Robson	Buffalo, N. Y.
Lehigh Valley	John I. Kinsey		South Easton, Pa.
Lehigh Valley	P. Hollenbeck		Weatherly, Pa.
Lehigh Valley	John Campbell		Delano, Pa.
Lehigh Valley	D. Clark		Hazleton, Pa.
Lehigh Valley	A. Mitchell		Wilkesbarre, Pa.
Lehigh Valley		E. R. Brown	Mauch Chunk, Pa.
Little Rock & Fort Smith	James Eblin	James Malone	Argenta, Ark.
Little Rock, Miss. River & Texas	Joseph Taylor	Joseph Taylor	Arkan's City, Ark.
Los Angeles & Independence	Jas. Velsir	J. S. Young	Los Angeles, Cal.
Louisville, New Albany & Chicago	Geo. Ruhland	Geo. Ruhland	New Albany Ind.
Long Island	Thos. Meehan	Hugh Longest	L. Isl'd City, N. Y.
Louisville, Cincinnati & Lexing'n	A. Schaeffer	A. Schaeffer	Louisville, Ky.
Louisville & Nashville	**Reuben Wells		Louisville, Ky.
Nashville & Decatur Div	W. H. Thomas	J. P. Furguson	Nashville, Tenn.
South & North Ala. Div	C. W. White		Birmingham, Ala
Memphis & Ohio Div	Thos. Walsh		Memphis, Tenn.
Clarksville Division	Wm. Adair		Bowling Green, Ky.
Ev., Hen. & Nashville Div	W. H. Thomas		Nashville, Tenn.
M			
Macon & Brunswick	R. Wagnon	R. Wagnon	Macon, Ga.
Maine Central	J. W. Philbrick	J. W. Philbrick	Waterville, Me.
Maine Central		C. H. Kenison	Augusta, Me.
Manchester & Lawrence	J. T. Gordon	J. T. Gordon	Concord, N. H.
Manhattan Beach	Lewis James		Bay Ridge, L. I.
Manhattan Elevated	T. W. Peeples		New York, N. Y.
Marietta & Cincinnati	E. M. Bosley	E. M. Bosley	Chilicothe, Ohio.
Marquette, Houghton & Onton'gn	W. H. Williams	H. D. Lyons	Marquette, Mich.
Memphis, Paducah & Northern	G. M. Taylor	G. M. Taylor	Paducah, Ky.
Memphis & Little Rock	Thos. Rennell	P. Twitchell	Argenta, Ark.
Memphis & Charleston	§H. N. Burford	J. J. Kasey	Memphis, Tenn.
Michigan Central	S. H. Edgerly		Jackson, Mich.
Michigan Central		††Robert Miller	Detroit, Mich.
Midland of New Jersey	W. C. Ennis		Wortendyke, N. J.
Milwaukee, Lake Shore & West'n	S. Charnly		Mamtowoc, Wis
Minneapolis & St. Louis	Thos. Downing	Thos. Downing	Minneapolis, Minn.
Mineral Point	Robert Hay	Robert Hay	Mineral Pt., Wis.
Mineral Range	George F. Coon		Hancock, Mich
Mississippi & Tennessee	Geo. Ensminger	S. J. Bolton	Memphis, Tenn.
Missouri & Western	A. C. Persing		Pierce City, Mo
Missouri, Iowa & Nebraska	J. G. Crozier		Alexandria, Mo.
Missouri, Kansas & Texas	H. H. Alexander		Denison, Texas.
Missouri, Kansas & Texas	**G. W. Cushing	John C. Barber	Sedalia, Mo.
Missouri, Kansas & Texas	Wm. T. Small		Parsons, Kan.
Missouri Pacific	§§John Hewitt	John Hodge	St. Louis, Mo.
Missouri Pacific	R. D. Grant		St. Louis, Mo.
Missouri Pacific	Geo. W. Walshe		Sedalia, Mo.
Missouri Pacific	H. V. Furies		Atchison, Kan.
Mobile & Montgomery	C. W. White	Lewis Barham	Montgomery, Ala
Mobile & Girard	J. C. Albrecht	A. J. Nix	Columbus, Ga.
Mobile & Ohio	R. H. Briggs	J. T. Booth	Whistler, Ala.
Mobile & Ohio	John Fitzgerald		Macon, Miss.
Mobile & Ohio	M. T. Carson		Jackson, Tenn.
Montgomery & Eufaula	D. M. Gugel	James A. Knight	Macon, Ga.
Morgan's Louisiana & Texas	N. Tilton	Wm. O'Brien	Algiers, La.
N			
Nashua & Lowell	S. A. Davis	S. A. Davis	Nashua, N. H.
Nashville, Chattan'ga & St. Louis	James Cullen	J. G. Sawyer	Nashville, Tenn.
St. Louis Division	L. B. Salisbury	W. H. H. Price	Mt. Vernon, Ill.
Naugatuck	Henry Hanford	George W. Gray	Bridgeport, Ct.
Nebraska	D. Hawksworth		Plattsmouth, Neb.
Nevada Central	J. C. Fisher		Battle Mountain, Nev.
Newburg, Dutchess & Connecticut	W. G. Vanbuskirk		Dutchess J'n, N. Y.
New Brunswick	P. A. Logan	P. A. Logan	Fredericton, N. B.
New Brunswick & Canada	Tho. Armstrong	G. Houlton	St. Andrew's, N. B.
New Haven & Northampton	Henry Fox	John Sweeny	New Haven, Ct.
New Jersey & New York	J. S. Drake		Jersey City, N. J.
New Jersey Southern	Rufus Blodgett		Manchester, N. J.
New Orleans, Texas & Mobile	§Josiah Bettis		Mobile, Ala.
New York, Lake Erie & Western	§§F. M. Wilder		Susquehanna, Pa.
New York, Lake Erie & Western	J. H. Vreeland		Jersey City, N. J.
New York, Lake Erie & Western		J. N. Milebam	Jersey City, N. J.
New York, Lake Erie & Western	J. Van Vechten	J. Van Vechten	Port Jervis, N. Y.
New York, Lake Erie & Western	V. Blackburn		Susquehanna, Pa.
New York, Lake Erie & Western		D. B. Goodell	Elmira, N. Y.
New York, Lake Erie & Western	George H. Griggs		Hornellsville, N.Y.
New York, Lake Erie & Western	Chas. O. Vedder	M. Wilder	E. Buffalo, N. Y.
New York, Lake Erie & Western	Jos. Bradt		Rochester, N. Y.
New York & Harlem	Theo. Wheeler		New York, N. Y.
New York & Harlem		C. E. Garey	Morrisania, N. Y.
New York Central & Hud. River		††Leander Garey	New York, N. Y.
New York Central Division	§G. B. Van Vorst	D. Hoit	West Albany, N.Y.
New York Central Division	§§Henry Watkeys		Syracuse, N. Y.
New York Central Division	§§Amos Gould		E. Buffalo, N. Y.
New York Central Division	§§S. L. White	Richard Donaby	Niagara Falls, N.Y.
New York Central Division		C. A. Olmstead	E. Buffalo, N. Y.
Hudson River Division	§§Wm. Buchanan	Peter Smith	New York, N. Y.
New York Central Division		W. B. White	E. Rochester, N.Y.
New York Central Division		Geo. Cummings	Rochester, N. Y.
New York, Ontario & Western	Edw. Minshull		Middletown, N. Y.
New York & New England	§§Geo. E. Boyden	Elias E. Pratt	Boston, Mass.
Norwich & Worcester Div	Richard Colburn	John W. Marden	Norwich, Ct.
Hartford Division	E. M. Humstone	S. Howland	Hartford, Conn.
New York, N. Haven & Hartford	§§H. Kettendorf	James Denver	New Haven, Ct.
Hartford Division	§§Jno. Henney, Jr.	L. Packard	Hartford, Ct.
New York, Penn. & Ohio	‡William Fuller	††J. H. F. Wiers	Cleveland, O.
New York, Penn. & Ohio	J. A. Cooper	D. S. Dockstader	Meadville, Pa.
New York, Penn. & Ohio	R. Wright	W. G. Huggard	Cleveland, O.

Railroad.	*Master-Mechanic.*	*Master Car-Builder.*	*Residence*
New York, Penn. & Ohio		S. V. Smith	Kent, O.
New York, Penn. & Ohio	William Hill	J. W. Holmes	Galion, O.
New York, Penn. & Ohio		J. T. Fosdick	Salamanca, N. Y
New York, Penn. & Ohio		Geo. Wilson	Dayton, O.
Northern Central	§§R. H. Soule	G. W. Demarest	Baltimore, Md.
Northern Central	J. M. Coale		Baltimore, Md.
Northern Central	James Strode	J. C. Dyott	Elmira, N. Y.
Northern New Hampshire	**Jas. N. Lauder		Concord, N. H.
Northern of Canada	Peter Clark	Peter Clark	Toronto, Can.
Northern Pacific	**A. P. Farrar	A. P. Farrar	Brainerd, Minn.
Dakota Division	A. Rupert		Fargo, Dak.
Pacific & P. Oreille Div	C. Z. Sanders	Tho. G. Davis	New Tacoma, W.T.
Northeastern		W. H. Day	Florence, S. C.
North Pacific Coast	James Walch		Saucelito, Cal.
Northern & Northwestern	C. C. Galt		Toronto, Can.
O			
Ogdensburg & Lake Champlain	Abraham Kiohs		Malone, N. Y.
Ohio Central	J. B. Morgan		Bucyrus, O.
Ohio & Mississippi	‡J. F. Sechler		Vincennes, Ind.
Ohio & Mississippi		J. P. Coulter	Aurora, Ind.
Cincinna'i Division	John Thumser		Seymour, Ind.
Springfield Division	E. K. Sechler		Pana, Ill.
Old Colony	J. K. Taylor	A. Gleason	Boston, Mass.
B. C. F. & N. Bedford Div	Geo. W. Reynolds	Sam. Stevens	Taunton, Mass.
Oregon & California	§§J. Brandt		Portland, Oregon.
Oregon Railway & Navigation Co.	J. F. Curtis	Chas. Phipps	Dalles, Oregon.
P			
Paducah & Elizabethtown	W. D. Robb	W. D. Robb	Elizabethtown, Ky.
Painesville & Youngstown	J. H. Jones		Painesville, O.
Panama	Thos. S. O'Brien		Aspinwall, U. S. C.
Parker & Karns City	Philip Davies	Wm. Wolford	Parker City, Pa.
Pensacola & Selma	R. H. Kelly		Selma, Ala.
Pennsylvania	§§T. N. Ely		Altoona, Pa
Pennsylvania	H. D. Garrett	J. W. Van Houten	W. Philadelphia, Pa
Pennsylvania	E. L. Camm	Samuel W. Myers	Harrisburg, Pa.
Pennsylvania	G. W. Strattan	John P. Levan	Altoona, Pa.
Pennsylvania	D. O. Shaver	J. G. Stewart	Pittsburg, Pa.
New Jersey Division	L. A. Bosdevex	E. F. Bosdevex	Meadow Sp'gs, N.J.
New Jersey Division		David H. Baker	Jersey City, N. J.
New Jersey Division	§§H. S. Hayward		Jersey City, N. J.
New Jersey Division	Tho. Kerr	P. S. Bogart	So. Amboy, N. J.
New Jersey Division	R. McDowell		Lambertville, N. J
New Jersey Division	W. McAllister		Camden, N. J.
West Penn. Division	C. B. Street	M. H. Fails	Blairsville, Pa.
Peoria, Decatur & Evansville	Isaac Adams		Pekin, Ill.
Peoria & Jacksonville	R. F. Hurd	R. F. Hurd	Pekin, Ill.
Peoria & Springfield	E. Deizerdt	E. Deizerdt	Peoria, Ill.
Petersburg	R. B. Andrews	J. W. Fleming	Petersburg, Va.
Philadelphia, Wilmington & Balt	S. A. Hodgman	Wm. Lingren	Wilmington, Del
Philadelphia & Atlantic City	J. W. Wright	E. Lippincott	Camden, N. J.
	§§Howard Fry		Williamsport, Pa.
	W. F. Beardsley		Sunbury, Pa.
Philadelphia & Erie	W. L. Forster		Renovo, Pa.
	W. L. Holman		Kane, Pa.
	W. T. Smith		Erie, Pa.
Philadelphia & Baltimore Central	S. D. Dandield	S. D. Dandield	Chester, Pa.
Philadelphia & Reading	*L. B. Paxson	John H. Rankin	Reading, Pa.
Catawissa Branch	W. H. Ellis	C. D. Ellis	Catawissa, Pa.
Germantown & Norris'n Div	Jackson Richards		Philadelphia, Pa.
North Penn. Division	Jackson Richards	C. W. Hammann	Philadelphia, Pa.
Del. & Bound Brook Div	Jackson Richards		Philadelphia, Pa.
Southeastern (Canada)	Edwin Goss		Richford, Vt.
Piedmont Air Line	†R. D. Wade		Richmond, Va.
Rich. & Danville Div		J. B. Vaughan	Richmond, Va.
North Carolina Div		J. C. Holt	Comp. Shops, N. C.
Pittsburg, Cincinnati & St. Louis	§§G. W. Rhodes		Columbus, O.
Little Miami Division	J. H. Setchel	John McVay	Cincinnati, O.
Little Miami Division		M. P. Ford	Columbus, O.
Col., Cin. & Ind. Division	Robert Curtis	Tho. Chamberlin	Columbus, O.
Col., Cin. & Ind. Div	Geo. H. Prescott	Chas. H. Starr	Logansport, Ind.
Col. Cin. & Ind. Division	C. M. St. Clair		Indianapolis, Ind.
Cin. & Mus'k. Val. Division	Leroy Kells	Daniel Jewell	Lancaster, O.
Pitts. Cin. & St. Louis Divis'n	Ross Kells		Denison, O.
Pitts. Cin. & St. Louis Divis'n		A. K. Mansfield	Steubenvill, O.
Pittsburg, Fort Wayne & Chicago	Geo. J. Parkin	John Marquis	Allegheny, Pa.
Pittsburg, Fort Wayne & Chicago	J. M. Boon	Israel Lee	Fort Wayne, Ind
Pittsburg, Fort Wayne & Chicago		J. J. Kirkland	Crestline, O.
Pittsburg, Titusville & Buffalo	H. J. Bookhammer	John Monks	Oil City, Pa.
Pittsburg, Virginia & Charleston	Wm. Lininger		Pittsburg, Pa.
Pittsburg & Lake Erie	S. W. Haines		Pittsburg, Pa.
Portland & Ogdensburg	Geo. H. Poor	W. G. Brewer	Portland, Me.
Portland & Rochester	E. H. C. Tompson	David Dow	Portland, Me.
Port Dover & Lake Huron	H. M. Aldrich		Woodstock, Ont.
Port Royal & Augusta	Geo. Riley	J. H. Milton	Port Royal, S. C.
Poughkeepsie, Hartford & Boston	John L. Driscoll		Poughkeepsie, N.Y
Prince Edward Island	A. Stronach	D. M. Fraser	Charlotte'n, P. E.I
Providence & Springfield	G. T. Richardson		Pascoag, R. I.
Providence & Worcester	A. Griggs	A. Griggs	Providence, R. I.
Providence, Warren & Bristol	Rufus Smith	Rufus Smith	Bristol, R. I.
Q			
Quebec, Mont., Ottawa & Occidental	†A. Davis		Montreal, Can.
Quincy, Missouri & Pacific			Kirksville, Me.
R			
Raleigh & Augusta Air-Line	**B. R. Harding		Raleigh, N. C.
Raleigh & Gaston	**B. R. Harding	B. R. Harding	Raleigh, N. C.
Rhinebeck & Connecticut	A. W. Quackenbush	John H. Decker	Rondout, N. Y.
Rich., Fredericksburg & Potomac	H. Khun	W. H. Trainham	Richmond, Va.
Richmond & Danville	See Piedmont Air-Line.		
Richmond & Petersburg	John O'Brien	H. L. Carter	Richmond, Va.
Rich., York River & Chesapeake	A. B. Armstrong	A. B. Armstrong	Richmond, Va.
Rio Grande	G. W. Rendall	M. Markwood	Brownsville, Tex.
Rochester & State Line	A. J. Robbins		Rochester, N. Y.
Rock Island & Peoria	Joseph Elder		Peoria, Ill.
Rome, Watertown & Ogdensburg	Geo. H. Hazleleton	Geo. H. Hazleton	Oswego, N. Y.
Rome, Georgia	O. W. Harbin	O. W. Harbin	Rome, Ga.
S			
Saginaw Valley & St. Louis			St. Louis, Mich.
San Francisco & Northern Pacific	Ed. Reynolds	H. C. Whiting	Donahue, Cal.
Savannah, Florida & Western	§Charles Collins	P. N. Raynall	Savannah, Ga.
Savannah & Memphis	R. A. Bridges		Opelika, Ala.
Scioto Valley	C. H. Cory	C. H. Cory	Portsmouth, O.
Seaboard & Roanoke	§§M. M. Pendleton		Portsmouth, Va.
Selma, Rome & Dalton	H. J. Sitton	W. W. Pierce	Selma, Ala.
Selma, Marion & Memphis	J. M. Levis		Marion, Ala.
Sheboygan & Fond du Lac	John Hickey	John Hickey	Sheboygan, Wis.
Shenango & Allegheny	Edw. Richardson		Greenville, Pa.
Shepaug	C. M. Allen		Litchfield, Ct.
Sioux City & Pacific	C. H. Foster	C. H. Foster	Missouri Valley Ia.
Sioux City & St. Paul	F. C. Butterfield	F. C. Butterfield	Shakopee, Minn.
Southern Pacific			
Northern Division	J. T. Wilson	F. N. Belliste	San Francisco, Ca
Los Angeles & Yuma Div	Jas. Velsir	J. S. Young	Los Angeles, Cal.
Tulare Division	S. Johnson		Tulare, Cal.
South Carolina	§P. J. Cochrane	Geo. H. Gramling	Charleston, S. C.
Southern Central	Chas. G. Brown	H. Mooney	Auburn, N. Y.
Southwestern of Georgia	D. M. Gugel	James A. Knight	Macon, Ga.
South Pacific Coast	Martin Carter	Martin Carter	Newark, Cal.

Railroad.	*Master Mechanic.*	*Master Car Builder.*	*Residence.*
Spartanburg, Union & Columbia	Wm. Platt	W. B. Brown	Spartanburg, S. C.
Spartanburg & Asheville	M. Fraser	W. B. Brown	Spartanburg, S. C.
Springfield, Athol & Northeastern	W. E. Grinager		Springfield, Mass.
Springfield Southern	F. W. Johnstone		Springfield, O.
State Line & Sullivan	J. O. Blight		Towanda, Pa.
Stockton & Copperopolis	John M. Fulton		Stockton, Cal.
Stonington & Providence	J. H. Anderson	J. H. Anderson	Providence, R. I.
St. Croix & Penobscot	G. H. Cossen	H. C. Tincker	Milltown, Me.
St. Johns	Jas. M. Owens		St. Augustine, Fla.
St. Johnsbury & Lake Champlain	Geo. E. Howe		St. Johnsbury, Vt.
S. Joseph & Des Moines	W. D. Rowley		St. Joseph, Mo.
St. Joseph & Western	E. Sleppy	E. Sleppy	So. St. Joseph, Mo
St. Lawrence & Ottawa	Calvin Dame	Calvin Dame	Prescott, Canada.
St. Louis, Iron Mount. & So.	**O. A. Haynes	Oscar Doolittle	St. Louis, Mo.
Arkansas Division	L. Finlay	L. Finlay	Little Rock, Ark.
Missouri Division	W. H. Harris		De Soto, Mo.
St. Louis, Alton & Terre Haute	**Beriah Warren		St. Louis, Mo.
St. Louis, Salem & Little Rock	Thomas Sherson	A. W. Grosvernor	Steelville, Mo.
St. Louis & San Francisco	M. Kearney		N. Springfield, Mo.
St. Louis, Keokuk & Northwest'n	Wm. Foley		Keokuk, Iowa.
St. Louis Bridge Co. & Tunnel R.R.	H. M. Smith		St. Louis, Mo.
St. Paul & Duluth	W. McFarland	John Hill	St. Paul, Minn.
St. Paul, Minneapolis & Manitoba	J. C. Munro	J. C. Munro	St. Paul, Minn.
St. Paul & Sioux City	F. C. Butterfield	F. C. Butterfield	Shakopee, Minn.
Sussex	E. H. Osborn	R. L. Sutton	Newton, N. J.
Syracuse, Binghamton & N. Y.	James Buchanan	James Buchanan	Syracuse, N. Y.
Syracuse, Chenango & New York	Geo. W. West		Syracuse, N. Y.
T			
Tennessee & Pacific	William McKeand	William McKeand	Nashville, Tenn.
T. H. & Indianapolis } Vandalia / Indianapolis Div. } Line. / Vandalia Div. }	§§C. R. Peddle	E. D. Carter	Terre Haute, Ind.
	Clinton Idler		Indianapolis, Ind
	Chas. Butler		Effingham, Ill.
Logansport Division	A. J. Prescott	H. L. Clark	Logansport, Ind.
Texas & New Orleans	E. A. Campbell		Houston, Texas.
Texas & Pacific	H. J. Small	F. M. Alexander	Marshall, Texas.
Tioga & Elmira State Line	D. H. Stratton	D. H. Stratton	Blossburg, Pa.
Toledo, Delphos & Burlington	Geo. H. Tier		Delphos, O.
Toledo, Peoria & Western	W. O. Hewitt	R. M. Hemphill	Peoria, Ill.
Toronto, Grey & Bruce	†David Preston		Toronto, Can.
Toronto & Nipissing	J. Haggas		Toronto, Can.
Troy & Boston	Z. B. Davis	R. V. Coon	Troy, N. Y.
U			
Ulster & Delaware	J. B. Dykeman	Jno. H. Decker	Rondout, N. Y.
Union Pacific	§I. H. Congdon	‡‡Geo. F. Stevens	Omaha, Neb.
Eastern Division		A. M. Collett	Omaha, Neb.
Eastern Division		H. P. Makely	Grand Island, Neb
Mountain Division	T. A. Davis	John E. Davis	Cheyenne, Wg. T.
Laramie Division		Floyd Heavaner	Laramie, Wg. T.
Western Division		R. V. Brinkley	Evanston, Wg. T.
Colorado Division	James S. Scott	E. G. Thomas	Golden, Col.
Utah Central	W. B. Armstrong	Sam. S. Tucker	Salt Lake City.
Utah Western	Robert Anderson		Salt Lake City, U.
Utica & Black River	John Bailey	David James	Utica, N. Y.
Utica, Ithaca & Elmira	Geo. W. Cleveland	F. W. Magargil	Breesport, N. Y.
V			
Valley	Wm. Spittle	Wm. Spittle	Cleveland, O.
Vicksburg & Meridian	Jas. B. Browne		Vicksburg, Miss.
Vicksburg, Shreveport & Pacific	C. H. Tull		Monroe, La.
Virginia & Truckee	I. N. Fording		Carson, Nev.
W			
Wabash, St. Louis & Pacific	Chauncy Morris		Fort Wayne, Ind.
Wabash, St. Louis & Pacific	Jacob Johann	B. B. Rose	Springfield, Ill.
Wabash, St. Louis & Pacific		U. H. Kohler	Toledo, Ohio.
Wallkill Valley	A. W. Quackenbush	Jno. H. Decker	Rondout, N. Y.
Wash. City, Va. Mid. & G. South	Jas. E. Waddey	J. T. Nalls	Alexandria, Va.
Washington & Ohio	Edward Dunn	John Harrison	Alexandria, Va.
Welland	James Taylor	Wm. H. Pay	St. Catharine, C.W.
Westchester & Philadelphia	John Moyer	Nathan Pawling	Philadelphia, Pa.
Western & Atlantic	John H. Flynn	W. G. Grambling	Atlanta, Ga.
Western Maryland	§David Holtz	J. H. Nusser	Union Bridge, Md.
Western North Carolina	Geo. W. Gates		Salisbury, N. C.
Western, of Alabama	Robert King	F. M. Wade	Montgomery, Ala.
Western R. R. N. C.	Isaac W. Clark	Isaac W. Clark	Fayetteville, N. C.
Western Union	John Taylor	E. A. Eddy	Racine, Wis.
West Feliciana	J. A. Tilton	Wm. McKelvey	Laurel Hill, La.
West Jersey	W. McAlister	C. C. Williams	Camden, N. J.
White Water	§L. W. Wingert		Harrison, O.
Wilmington, Columbia & Augusta	John Bissett	W. H. Day	Florence, S. C.
Wilmington & Weldon	John Bissett	C. R. Clowes	Wilmington, N. C.
Wisconsin Central	G. Campbell	J. L. Adam	Stevens' P't, Wis.
Worcester & Nashua	John G. Brady	John G. Brady	Worcester, Mass.

Directory of Railway Superintendents and Purchasing Agents

THROUGHOUT THE UNITED STATES AND CANADA.

REFERENCES.—* General Manager. † Managing Director. ‡ Assistant General Superintendent. § Assistant Superintendent. ** Superintendent of Transportation. §§ Assistant General Manager.

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
A			
Adirondack	C. E. Durkee		Saratoga, N. Y.
Alabama Central	John M. Bridges		Selma, Ala.
Alabama Great Southern	Chas. T. Ball	R. W. Healey	Chattanooga, Tenn.
Albany & Susquehanna	*C. F. Young		Honesdale, Pa.
Alleghany Valley	David McCargo	David McCargo	Pittsburg, Pa.
Anderson, Lebanon & St. Louis	Jas. A. Larrard		Anderson, Ind.
Arkansas Midland	*A. H. Johnson		Helena, Ark.
Ashtabula & Pittsburg	D. B. McCoy		Ashtabula, O.
Atchison, Topeka & Santa Fe	*W. B. Strong	F. M. Smith	Topeka, Kan.
Western Division	W. W. Borst		Nickerson, Kan.
Eastern Division	D. J. Chase		Topeka, Kan.
Atchison & Nebraska	*A. E. Touzalin		Omaha, Neb.
Atlanta & Charlotte Air Line	*G. J. Foreacre	G. J. Foreacre	Atlanta, Ga.
Atlanta & West Point	*L. P. Grant		Atlanta, Ga.
Atlantic & North Carolina	A. B. Andrews		Newbern, N. C.
Atlantic, Mississippi & Ohio	Geo. Hoffman	J. P. Minetree	Petersburg, Va.
Atlantic, Tennessee & Ohio	J. J. Gormley		Caarlotte, N. C.
B			
Baltimore & Ohio	**W. M. Clements	N. S. Hill	Baltimore, Md.
Ohio & Chicago Division	C. H. Hodges		Chicago, Ill.
Pittsburg Division	G. M. Serpell		Connellsville, Pa.
Baltimore & Potomac	Geo. C. Wilkins	A. W. Sumner	Baltimore, Md.
Bangor & Piscataquis	Arthur Brown		Bangor, Me.
Bath & Hammondsport	M. H. Hall		Hamm'dsp't, N. Y.
Bedford, Sp'gville, Owensb'g & Bd.	Jas. W. Kennedy	Jas. W. Kennedy	Bedford, Ind.
Bellefonte & Snow Shoe	Daniel Rhoads		Bellefonte, Pa.
Bell's Gap	Robert G. Ford		Bellwood, Pa.
Bennington & Rutland	F. C. White	F. C. White	Rutland, Vt.
Blairstown	J. D. Vail		Blairstown, N. J.
Boston, Revere Beach & Lynn	E. H. Whorf		Boston, Mass.
Boston & Albany	*Wm. Bliss		Boston, Mass.
Boston & Albany	C. O. Russell		Springfield, Mass.
Boston & New York Air Line	Jos. H. Franklin		New Haven, Conn.
Boston & Providence	A. A. Folsom	A. A. Folsom	Boston, Mass.
Boston Concord & Montreal	*I. A. Dodge		Plymouth, N. H.
Boston, Concord & Montreal	§W. A. Stowell	J. Thomas Vose	Boston, Mass.
Boston, Hoosac Tunnel & Western	E. B. Burnham		Mechanicsville, N.Y.
Boston & Maine	J. T. Furber	M. E. Wood	Boston, Mass.
Boston & Lowell	A. A. Hobart	F. H. Nourse	Boston, Mass.
Boston, Barre & Gardner	H. M. Witter	H. M. Witter	Worcester, Mass.
Brooklyn, Flatbush & Coney Isl'd	W. E. Dorwin		Brooklyn, N. Y.
Brunswick & Albany	R. D. Meader		Brunswick, Ga.
Burlington & Mo. River (in Neb.)	*A. E. Touzalin	G. Hargreaves	Omaha, Neb.
Burlington & Mo. River (in Neb.)	Geo. W. Holdrege		Lincoln, Neb.
Burlington, Iowa	J. C. Phillipi		Lincoln, Neb.
Burlington, Cedar Rapids & Nor'n	C. J. Ives	Rob't Williams	Cedar Rapids, Ia.
Burlington & Northwestern	John F. Gerry	John F. Gerry	Burlington, Ia.
Burlington & Southwestern	J. W. Smith	J. W. Smith	Burlington, Ia.
Buffalo & Southwestern	*John F. Moulton		Buffalo, N. Y.
Buffalo, New York & Philadelphia	Geo. S. Gatchell	J. H. Pool	Buffalo, N. Y.
C			
Cairo & St. Louis	*L. M. Johnson	L. M. Johnson	St. Louis, Mo.
Cairo & Vincennes	Roswell Miller	T. W. Fitch	Cairo, Ill.
California Pacific & Northern	*A. Fillmore		Sacramento, Cal.
Camden & Atlantic	F. A. Lister	F. A. Lister	Camden, N. J.
Canada Central	T. A. McKinnon		Brockville, Can.
Canada Southern	*Wm. Taylor	A. F. Howland	St. Thomas, Ont.
U. S. Division	E. P. Murray		Toledo, O.
Canada Division	W. E. Carroll		St. Thomas, Ont.
Canadian Pacific	J. F. Lynskey		Winnepeg, Man.
Carbondale & Shawnestown	R. J. Cavett		Carbondale, Ill.
Carolina Central	V. Q. Johnson	C. H. Roberts	Wilmington, N. C.
Catasauqua & Fogelsville	C. W. Chapman	C. W. Chapman	Catasauqua, Pa.
Cayuga Southern	W. Stevenson		Sayre, Pa.
Cayuga & Susquehanna	W. R. Humphreys		Ithaca, N. Y.
Cazenovia, Canastota & De Ruyter	John Stebbins		Caz'novia, N. Y.
Central Pacific	*A. N. Towne		San Francisco, Cal
Central Pacific	J. A. Fillmore		San Francisco, Cal.
Central Pacific		J. R. Watson	Sacramento, Cal.
Western & Visalia Divisions	A. D. Wilder		Oakland, Cal.
Truckee Division	Frank Free		Wadsworth, Nev.
Humboldt Division	G. W. Coddington		Carlin, Nev.
Salt Lake Division	A. G. Fell		Ogden, Utah
Central Vermont	J. W. Hobart		St. Albans, Vt.
Central Vermont	†J. M. Foss		St. Albans, Vt.
Western Division	John Schrier		Ogdensburg, N. Y.
Central & Southern Division			St. Albans, Vt.
Rutland Division	J. Burdett		Rutland, Vt.
New London Northern	G. W. Bentley	G. W. Bentley	New London, Conn.
Central of Georgia	Wm. Rogers	Henry Yonge	Savannah, Ga.
Atlanta Division	W. F. Shellman		Macon, Ga.
Central of Iowa	D. N. Pickering	D. N. Pickering	Marshalltown, Ia.
Central of New Jersey	James Moore	B. W. Burnet	Elizabeth, N. J.
Central Division	W. W. Stearns		Elizabeth, N. J.
Lehigh & Susq. Division	W. S. Polhemus		Manch Chunk, Pa.
Champaign, Havana & Western	A. H. Wood		Urbana, Ill.
Charleston & Savannah	C. S. Gadsden		Charleston, S. C.
Charlotte, Columbia & Augusta	Jno. G. Clarke		Columbia, S. C.
Chesapeake & Ohio	W. M. S. Dunn	J. A. Netherland	Richmond, Va.
Cheraw & Darlington	J. F. Divine		Society Hill, S. C.
Cherokee	John Postell		Atlanta, Ga.
Cheshire	R. Stewart	H. H. Stone	Keene, N. H.
Chester & Lenoir	James Mason		Chester, S. C.
Chicago & Northwestern	*Marvin Hughitt	R. W. Hamer	Chicago, Ill.
Chicago & Northwestern	J. S. Oliver		Chicago, Ill.
Chicago & Northwestern	§Chas. C. Wheeler		Chicago, Ill.
Wisconsin & Mill. Division	F. J. Cuyler		Chicago, Ill.
Peninsula Division	W. B. Lindsay		Escanaba, Mich
Madison Division	C. A. Swinefford		Baraboo, Wis.
Galena Division	Chas. Murray		Chicago, Ill.
Des Moines & Iowa Division	J. M. Whitman		Clinton, Iowa.
Winona & St. Peter Division	S. Sanborn		Winona, Minn.
Galena & Wisconsin Br.	J. B. Trull		Galena, Ill.
Chicago & Alton	J. C. McMullen	A. V. Hartwell	Chicago, Ill.
Chicago & Alton	‡C. H. Chappell		Bloomington, Ill.
Chicago Division	*M. R. Richards		Chicago, Ill.
Kansas City St. Louis Div.	O. Vaughan		Mexico, Mo.
Chicago & Block Coal	*A. F. Beach		Veedersburg, Ind.
Chicago, Burlington & Quincy	Thos. J. Potter	Wm. Irving	Chicago, Ill.
Chicago, Burlington & Quincy	§John D. Besler		Galesburg, Ill.
Chicago, Burlington & Quincy	§E. Ryder		Chicago, Ill.
Middle, Galesb'g & Q'y Div.	H. Hitchcock		Galesburg, Ill.
St. Louis & R. Isl'd Division	W. R. Crumpton		St. Louis Mo.
Iowa Division	W. C. Perkins		Burlington, Iowa.
Chi., Clinton, Dubuque & Minn.	*E. O. Wyatt	F. O. Wyatt	Dubuque, Iowa.
Chicago & Eastern Illinois	O. S. Lyford	O. S. Lyford	Chicago, Ill.
Chicago & Iowa	W. H. Holcomb, *Rec.*		Rochelle, Ill.
Chicago & Northeastern	J. M. Turner		Lansing, Mich.
Chicago & Pacific	*J. M. Whitman	James Penny	Chicago, Ill.
Chicago & Paducah	D. H. Cocklin		Streator, Ill.
Chicago & Paducah		C. L. Rising	Chicago, Ill.
Chicago, St. Louis & New Orleans	*J. C. Clarke	J. C. Febiger, Jr.	New Orleans, La.
South Division	W. P. McKinley		McComb City, Miss.
North Division	J. G. Mann		Jackson, Tenn.
Chicago, Rock Island & Pacific	A. Kimball		Davenport, Iowa.
Chicago, Rock Island & Pacific	‡A. Manvel	A. Manvel	Chicago, Ill.
Southwestern Division	G. F. Walker		Trenton, Mo.
Iowa Division	H. F. Royce		Des Moines, Iowa
Keokuk & Des Moines Div.	John Givin		Keokuk, Ia.
Chicago & West Michigan	§C. M. Lawler		St. Joseph, Mich.
Chicago, Milwaukee & St. Paul	C. V. Can Horne	J. T. Crocker	Milwaukee, Wis.
Ch., LaCrosse & P. du C. Div.	H. C. Atkins		Milwaukee, Wis.
Northern Division	L. B. Rock		Milwaukee, Wis.
I. & M. & I. D. Division	C. H. Prior		Minneapolis, Minn.
Wabasha Division	J. H. Lakey		Wabasha, Minn.
Western Union Division	D. A. Olin		Pacine, Wis.
Sioux City & Dak. Div.	G. E. Merchant		Sioux City, Ia.
Southern Minnesota Div.	J. M. Egan	J. M. Egan	La Crosse, Wis
Chicago, Pekin & Southwestern	J. Murray	C. L. Rising	Chicago, Ill.
Chicago, St. Paul & Minneapolis	E. W. Winter		St. Paul, Minn.
Chicago & Grand Trunk	Henry Funnell		Battle Creek, Mich.
Chicago & Grand Trunk		N. Wall	Port Huron, Mich.
Chippewa Falls & Western	L. C. Stanley		Chip'wa F'ls, Wis.
Cincinnati & Eastern	George H. Wilber		Batavia, O.
Cincinnati, Wabash & Michigan	*Norman Beckley	Norman Beckley	Elkhart, Ind.
Cincinnati, Richmond & Chicago	*Lewis Williams		Cincinnati, O.
Cincinnati, Rockp't & Southwest'n	H. C. Branham	H. C. Branham	Rockport, Ind.
Cincinnati & Terre Haute	John Holland		Terre Haute, Ind.
Cin., Cumber'd Gap & Charleston	W. J. Taylor		Knoxville, Tenn.
Cincinnati, Hamilton & Dayton	*Lewis Williams	Lewis Williams	Cincinnati, O.
Cin., Hamilton & Indianapolis	Lewis Williams		Cincinnati, O.
Cincinnati, Lafayette & Chicago	J. W. Sherwood		Cincinnati, Ohio.
Cin., Sandusky & Cleveland	*D. W. C. Brown	Frank Herriman	Sandusky, O.
Cincinnati Southern	Sam'l Woodward	C. M. Woodward	Cincinnati, O.
Cin., Indianapolis, St. Louis & Chi.	J. W. Sherwood		Indianapolis, Ind
Cin., Indianapolis, St. Louis & Chi.		George Tozzer	Cincinnati, O.
Cleve., Col., Cin. & Indianapolis	*E. B. Thomas	J. L. Yale	Cleveland, O.
Indianapolis Division	C. C. Gale		Indianapolis, Ind
Col. and Cincinnati Divs.	Robert Blee		Cleveland, O.
Cleveland & Marietta	S. C. Baldwin	R. B. Hoover	Marietta, Ohio.

Railroad.	*Superintendent. Purchasing Agent.*	*Residence.*
Cleveland & Pittsburg	John Thomas	Cleveland, O.
Cleveland & Pittsburg	*J. D. Layng..... Wm. Mullins	Pittsburg, Pa.
Cleveland, Mt. Vernon & Columb's	G. A. Jones	Mt. Vernon, O.
Cleve., Tuscarawas Val. & Wheel.	*Oscar Townsend	Cleveland, O.
Cobourg, Petersboro & Marmora	James R. Barber..... J. R. Barber	Coburg, Ont.
Columbus & Hocking Valley	Orland Smith	Columbus, O.
Columbus & Toledo	Orland Smith..... Geo. R. Carr	Columbus, O.
Columbus & Rome	T. J. Nuckolls	Columbus, Ga.
Concord & Claremont	George E. Todd	Concord, N. H.
Concord	H. E. Chamberlin..... H. E. Chamberlin	Concord, N. H.
Concord & Portsmouth	H. E. Chamberlin	Concord, N. H.
Connecticut Central	D. D. Warren, Pres	Springfield, Mass.
Connecticut River	John Mulligan..... John Mulligan	Springfield, Mass.
Connecticut Valley	Samuel Babcock	Hartford, Conn.
Connecticut Western	J. F. Jones	Hartford, Conn.
Connecticut & Passumpsic Rivers	H. E. Folsom	Lyndonville, Vt.
Corning, Cowanesque & Antrim	A. H. Gorton..... Andrew Beers	Corning, N. Y.
Covington, Col. & Black Hills	J. J. Booge	Sioux City, Iowa.
Cumberland Valley	J. F. Boyd..... O. N. Lull	Chambersburg, Pa.
Cumberland & Pennsylvania	P. L. Burwell..... P. L. Burwell	Cumberland, Md.
Cumberland & Maurice River	L. H. Dowdney	Port Norris, N. J.

D

Danbury & Norwalk	L. W. Sandiforth	South Norwalk, C.
Danville & Southwestern	James A. Eads	Paris, Ill.
Davenport & Northwestern	D. Flanigan	Davenport, Ill.
Dayton & Michigan	E. E. Dwight	Dayton, O.
Dayton & Union	C. C. Gale	Indianapolis, Ind.
Dayton & Southeastern	J. E. Gimperlin, *Rec* E. F. Pryor	Dayton, O.
Dayton & Southeastern	O. S. Sanford	Easton, Md.
Delaware & Chesapeake	R. Manville..... J. White Sprong	Albany, N. Y.
Delaware & Hudson Canal Co	*C. F. Young	Honesdale, Pa.
Delaware & Hudson Canal Co	C. D. Hammond	Albany, N. Y.
Albany & Susq. Division	Theo. Voorhees	Troy, N. Y.
Rensselaer & Saratoga Div		New York City.
Delaware, Lackawanna & Western	G. W. B. Cushing	Scranton, Pa.
Delaware, Lackawanna & Western	W. F. Hallstead	Scranton, Pa.
Bloomsburg Division	G. Bogart	Hoboken, N. J.
Morris & Essex Division	Andrew Reasoner	Oswego, N. Y.
Oswego & Syracuse Division	W. B. Phelps	Scranton, Pa.
Utica, Chenango & Sus. Div	W. G. Oakman	Wilmington, Del.
Delaware Western	David Cunnell	Denver, Col.
Denver & Rio Grande	S. R. Ainslie..... S. R. Ainslie	Denver, Col.
Denver, South Park & Pacific	C. W. Fisher..... Charles Wheeler	Adel, Iowa.
Des Moines, Adel & Western	C. N. Gilmore	Des Moines, Ill.
Des Moines & Ft. Dodge	C. N. Gilmore..... C. N. Gilmore	Detroit, Mich.
Detroit & Bay City	S. R. Callaway..... Allan Bourn	Detroit, Mich.
Detroit, Gr. Haven & Milwaukee	W. J. Morgan..... John S. Lorimer	Ypsilanti, Mich.
Detroit, Hillsdale & Southwestern	W. F. Parker	Detroit, Mich.
Detroit, Lansing & Northern	J. B. Mulliken..... Allan Bourn	Cambridge, Md.
Dorchester & Delaware	J. M. Murphy	Dunkirk, N. Y.
Dunkirk, Allegheny Val. & Pitts	D. Thayer	New York City.
Dunkirk, Allegheny Val. & Pitts	C. V. Deforest	

E

East Broad Top	A. W. Sims	Orbisonia, Pa.
East Alabama & Cincinnati	W. W. Barnes	Opelika, Ala.
East Line & Red River	W. B. Ward	Jefferson, Tex.
East Tenn., Virginia & Georgia	J. F. O'Brien..... J. F. O'Brien	Knoxville, Tenn.
Eastern	**D. W. Sanborn..... Geo. J. Fisher	Boston, Mass.
Eastern Kentucky	H. W. Bates..... H. W. Bates	Riverton, Ky.
Eastern Kentucky	Geo. Noble	Riverton, Ky.
Eastern Kentucky	W. Thompson	Prince Anne, Md.
Eastern Shore	J. M. Kimball	Erie, Pa.
Erie & Pittsburg	*J. D. Layng..... Wm. Mullins	Pittsburg, Pa.
Erie & Pittsburg	P. Evarts Palisade	Palisade, Nev.
Eureka & Palisade	F. W. Cram	Bangor, Maine.
European & North American	J. E. Martin..... Jno. L. White	Evansville, Ind.
Evansville & Terre Haute	Jos. Collett..... W. D. Macfarland	Terra Haute, Ind.
Evansville, Terre Haute & Chi		

F

Fitchburg	John Adams..... F. S. Pratt	Boston, Mass.
Vermont & Mass. Div	**E. K. Turner	Fitchburg, Mass
Flint & Pere Marquette	Sanford Keeler..... G. C. Cook	E Saginaw, Mich.
Florida Central	W. M. Davidson..... W. M. Davidson	Jacksonville, Fla.
Flushing, North Shore & Central	Samuel Spencer..... Samuel Spencer	L'g Isl'd C'y, N. Y.
Fonda, Johnstown & Gloversville	L. Caten	Gloversville, N. Y.
Fon du Lac, Amboy & Peoria	A. Kinyon	Fond du Lac, Wis.
Fort Madison & Northwestern	S. B. Kenrick..... S. B. Kenrick	Fort Madison, Ia
Fort Wayne & Jackson	M. D. Woodford..... M. D. Woodford	Jackson, Mich.
Fort Wayne, Muncie & Cincinnati	W. W. Worthington & P. Ag't.	Fort Wayne, Ind.
Foxburg, St. Petersburg & Clarion	Benj. B. Newton	Foxburg, Pa.
Frankfort & Kokomo	J. B. Clark..... E. H. Andress	Lafayette, Ind.
Fredericton	F. B. Edgecombe	Fredericton, N. B.
Freehold & New York	J. E. Ralph	Freehold, N. J.

G

Gal., Harrisburg & San Antonio	James Converse	Houston, Texas.
Gal., Houston & Henderson	*W. H. Harding..... W. H. Harding	Palestine, Texas.
Geneva, Ithaca & Sayre	Wm. Stevenson	Sayre, Pa.
Georgia	S. K. Johnson..... S. K. Johnson	Augusta, Ga.
Grand Haven	*F. H. May..... F. H. May	Allegan, Mich.
G. Rapids, Newaygo & L. Shore	C. Warner	G. Rapids, Mich.
Grand Rapids & Indiana	W. O. Hughart, Pres't. W. R. Shelby	G. Rapids, Mich.
Northern Division	J. M. Matheany	G. Rapids, Mich.
Southern Division	P. S. O'Rourke	Fort Wayne, Ind.
Grand Trunk	*J. Hickson..... John Taylor	Montreal, Canada.
Grand Trunk	W. J. Spicer	Montreal, Canada.
Grand Tower & Carbondale	T. M. Williamson..... Wm. W. Harris	Grand Tower, Ill.
Grayville & Mattoon	*G. L. Bradbury	Mattoon, Ill.
Grayville & Mattoon	G. R. Coldeigh	Mattoon, Ill.
Great Western (Canada)	Charles Stiff	Hamilton, Ont.
Great Western (Canada)	G. R. Nash	London, Ont.
Green Bay & Minnesota	*Timothy Case	Green Bay, Wis.
Greenville & Columbia	J. W. Fry	Columbia, S. C.
Greenville, Col. & Birmingham	E. P. Bull	Greenville, Miss.
Greenwich & Johnsonville	H. H. Warner	Greenwich, N. Y.
Gulf, Colorado & Santa Fe	*John Sealey	Galveston, Texas.
Gulf, Western Texas & Pacific	M. D. Monserrate	Cuero, Texas.

H

Hamilton & Northwestern	*F. W. Cumberland	Hamilton, Ont.
Hannibal & St. Joseph	W. R. Woodward..... T. L. Dunn	Hannibal, Mo.
Hannibal & St. Joseph	W. R. Woodward	Hannibal, Mo.
Eastern Division	W. C. Alberger	Kansas City, Mo.
Western Division	Henry A. Young	Hannover, Pa.
Hanover Junction & Gettysburg	*H. C. Root	Bennington, Vt.
Harlem Extension South	H. E. Bullock..... H. E. Bullock	Rantoul, Ill.
Havana, Rantoul & Eastern	L. B. Stillson..... D. L. Draper	Bridgeport, Conn.
Housatonic		Houston, Texas.
Houston, East & West Texas	A. H. Swanson..... A. H. Swanson	Houston, Texas.
Houston & Texas Central	M. G. Howe	Houston, Texas.
Southern Division	G. A. Quinlan	Corsicana, Texas.
Northern Division	Geo. F. Gage..... S. B. Knight	Huntingdon, Pa.
Huntingdon & Broad Top		

I

Illinois Central	E. T. Jeffrey..... O. Ott	Chicago, Ill.
Chicago Division	C. A. Beck	Centralia, Ill.
Northern Division	J. C. Jacobs	Amboy, Ill.
Iowa Division	D. W. Parker	Dubuque, Ia.

Railroad.	*Superintendent. Purchasing Agent.*	*Residence.*
Springfield Division	T. J. Hudson	Springfield, Ill.
Illinois Midland	L. Genis, *Rec* J. G. Clifford	Terre Haute, Ind.
Illinois & St. Louis	C. H. Sharman	St. Louis, Mo.
Indiana, Bloomington & Western	I. B. Barton..... H. C. Norton	Indianapolis, Ind.
Indianapolis, Decatur & Spring	E. H. Goodrich	Indianapolis, Ind.
Indianapolis & St. Louis	E. B. McClure..... H. W. Comstock	Indianapolis, Ind.
Indianapolis, Peru & Chicago	§§E. C. Murphy	Indianapolis, Ind.
Indianapolis, Peru & Chicago	John Mc Kenna	Peru, Ind.
Indianapolis & Vincennes	J. J. Turner	Indianapolis, Ind
Intercolonial	D. Pottinger..... L. B. Archibald	Moncton, N. B.
Halifax & St. John Division	Jas. Coleman	Truro, N. S.
Northern Division	M. Busby	Campbell'n, N. B.
International & Great Northern	*H. M. Hoxie..... H. M. Hoxie	Galveston, Texas.
Iowa Eastern	H. H. Kerr	Beulah, Iowa.

J

Jacksonville, N. Western & S. E.	E. S. Greenleaf	Jacksonville, Ill.
Jacksonville, Pen. & Mobile	J. D. Hollister	Tallahassee, Fla.
Jeff., Madison & Indianapolis	E. W. McKenna	Louisville, Ky.
Jeff., Madison & Indianapolis	Wm. Mullins	Pittsburg, Pa.
Junction & Breakwater	Tho. Groome	Lewes, Del.

K

Kansas Central	W. A. Martin..... W. A. Martin	Leavenworth, Kan.
Kan. City, Burlington & Santa Fe	James Houston	Burlington, Kan.
Kansas City, Fort Scott & Gulf	L. W. Towne..... Geo. H. Nettleton	Kansas City, Mo.
Kansas City, Lawrence & South	L. W. Towne..... Geo. H. Nettleton	Kansas City, Mo.
Kan. City, St. Joseph & C. Bluffs	J. F. Barnard	St. Joseph, Mo.
Kan. City, St. Joseph & C. Bluffs		Kansas City, Mo.
Kansas City & Eastern	H. Hale	Independence, Mo
Kansas Pacific	*S. H. H. Clark..... A. D. Clark	Omaha, Neb.
Kansas Pacific	S. T. Smith	Kansas City, Mo.
Kaw Valley Division	J. O. Brinkerhoff	Kansas City, Mo.
Smoky Hill Division	J. T. Odell	Ellis, Kansas.
Denver Division	J. T. Odell	Denver, Col.
Cheyenne Division	A. A. Egbert	Denver, Col.
Ken. & Smyrna & Del. Bay	J. F. Bingham	Chestertown, Md.
Kentucky Central	J. R. Ledyard	Covington, Ky.
Kingston & Pembroke	B. W. Folger..... Wm. Harty	Kingston, Can.
Knox & Lincoln	C. A. Coombs..... C. A. Coombs	Bath, Maine.
Knoxville & Ohio	G. J. Kinzel	Knoxville Tenn.

L

Lake Erie & Western	*E. H. Waldron..... E. H. Andress	Lafayette, Ind.
Sandusky Division	D. S. Hill	Fremont, Ohio.
Bloomington Division	M. Clark	Lafayette, Ind.
Lake Ontario Southern	*Jas. E. Briggs	Newark, N. Y.
Lake Shore & Mich. Southern	*John Newell	Cleveland, Ohio.
Lake Shore & Mich. Southern	Charles Paine..... A. C. Armstrong	Cleveland, Ohio.
Buffalo & Erie Division	C. B. Couch	Cleveland, Ohio.
Toledo Division	Thos. Flesher, Jr	Toledo, Ohio.
Michigan Division	J. E. Curtis	Detroit, Mich.
Detroit Division	P. S. Blodgett	Chicago, Ill.
Western Division	J. H. Parsons	Lansing, Mich.
Lansing Division	T. J. Charlesworth	Stoneboro, Pa.
Franklin Division	Geo. H. McIntire	Bethlehem, Pa.
Lehigh Valley	Robert H. Sayre	Philadelphia, Pa.
Lehigh Valley	L. Chamberlin	Mauch Chunk, Pa.
Beaver Meadow Division	A. G. Brodhead, Jr	Mauch Chunk, Pa.
Mahanoy Division	James I. Blakslee	Metuchen, N. J.
New Jersey Division	H. E. Packer	Wilkesbarre, Pa.
Wyoming Division	A. Mitchell	Quebec, Can.
Lewis & Kennebec	W. C. Hall	East Liberty, Pa.
Ligonier Valley	Thos. A. Mellon	Little Rock, Ark.
Little Rock & Fort Smith	T. Hartman	Pine Bluff, Ark.
Little Rock, Miss. River & Texas	J. A. Woodson..... J. A. Woodson	Los Angeles, Cal.
Los Angeles & Independence	§W. J. L. Moulton	L'g Isla'd Cy, N.Y.
Long Island	P. R. Sharp, Rec..R. M. Galloway	Louisville, Ky.
Louisville & Nashville	*F. de Funiak	Louisville, Ky.
Louisville & Nashville	D.W. C. Rowland..G. C. Breed	St. Louis, Mo.
So. L. & N. A. & N. & D. Div.	James Montgomery	Memphis, Tenn.
Memphis Line	J. T. Harrahon	Nashville, Tenn.
Nashville & Decatur Div	James Geddes	Birmingham, Ala.
So. & North Alabama	B. Dunham	Louisville, Ky.
Louisville, Cincinnati & Lexington	Wm. Mahl..... Wm. Mahl	Louisville, Ky.
Louisville, New Albany & Chicago	J. MacLeod..... Wm. M. Lewis	New Albany, Ind.
Louisville, N. Albany & St. Louis	H. L. Shepherd	

M

Macon & Brunswick	Jas. M. Edwards..W. C. Jones	Macon, Ga.
Maine Central	Payson Tucker	Portland, Me.
Manchester & Lawrence	H. E. Chamberlin	Concord, N. H.
Manchester & North Weare	H. E. Chamberlin	Concord, N. H.
Manhattan Beach	A. Corbin, *Pres't*	New York, N. Y.
Manhattan Elevated	§§Frank K. Hain	New York, N. Y.
Eastern Division	Robert Stewart	New York, N. Y.
Western Division	T. T. Onderdonk	New York, N. Y.
Marietta & Cincinnati	Jas. H. Stewart. J. H. Stewart	Cincinnati, O.
Marquette, Houghton & Ontonag'n	*Samuel Schoch	Marquette, Mich.
McKean & Buffalo	S. V. Godden	Smethport, Pa.
Memphis & Little Rock	*Jas. Harrington	Memphis, Tenn.
Memphis & Little Rock	E. K. Sibley	Huntsville, Ala.
Memphis & Charleston	John A. Grant..... John A. Grant	Paducah, Ky.
Memphis, Paducah & Northern	*N. Monsarrat..... N. Monserrat	Romeo, Mich.
Michigan Air Line	*M. S. Hadley	Detroit, Mich.
Michigan Central	*H. B. Ledyard..... Allan Bourn	Jackson, Mich.
Michigan Central	*E. C. Brown	Bay City, Mich.
Mackinaw & Saginaw Div	W. A. Vaughan	Jackson, Mich.
Main Line & G. R. & Kal. Div's	C. B. Bush	Middlburg, N. Y.
Middleburg & Schoharie	P. S. Demforth	[Thompson, Ridge, N.Y.
Middletown & Crawford	D. Thompson	Jersey City, N. J.
Midland of New Jersey	*H. M. Britton	Port Hope, Ont.
Midland Railway of Canada	H. G. Taylor	Milwaukee, Wis.
Milwaukee, Lake Shore & West'n	H. G. H. Reed	Mineral Point, Wis.
Mineral Point	G. W. Cobb..... G. W. Cobb	Hancock, Mich.
Mineral Range	*C. E. Holland	Minneapolis, Minn.
Minneapolis & St. Louis	*Chas. F. Hatch..Chas. F. Hatch	Wabasha, Minn.
Minnesota Midland	J. H. Lakey	Memphis, Tenn.
Mississippi & Tennessee	M. Burke..... M. Burke	Alexandria, Mo.
Missouri, Iowa & Nebraska	Col. Henry Hill..J. FitzHenry	Sedalia, Mo.
Missouri, Kansas & Texas	*Abram Mitchell..G. M. Babcock	Sedalia, Mo.
Sedalia, Ft. S. & Neosho Div	L. Pearson	Denison, Tex.
Cherokee & Choctaw Div	E. Harding	Hannibal, Mo.
Missouri, S. & E.	Geo. H. Huntington	Sedalia, Mo.
Fort Scott Division	L. Pearson	St. Louis, Mo.
Missouri Pacific	A. A. Talmage..... R. B. Lyle	St. Louis, Mo.
Missouri Pacific	†A. W. Dickinson	St. Louis, Mo.
Eastern Division	Miller Bullard	St. Louis, Mo.
Central Branch Division	W. W. Fagan	Sedalia, Mo.
Western Division	Warder Cumming	Mobile, Ala.
Mobile & Alabama Grand Trunk	F. B. Clark, Prest	Mobile, Ala.
Mobile & Ohio	*A. L. Rives..... A. L. Rives	Jackson, Tenn.
Northern Division	E. S. Hosford	Mobile, Ala.
Southern Division	C. Fleming	Columbus, Ga.
Mobile & Girard	W. L. Clark	Montgomery, Ala.
Mobile & Montgomery	G. B. Dunham	Mont Alto, Pa.
Mont Alto	G. B. Weistling	Macon, Ga.
Montgomery & Eufaula	W. G. Raoul	

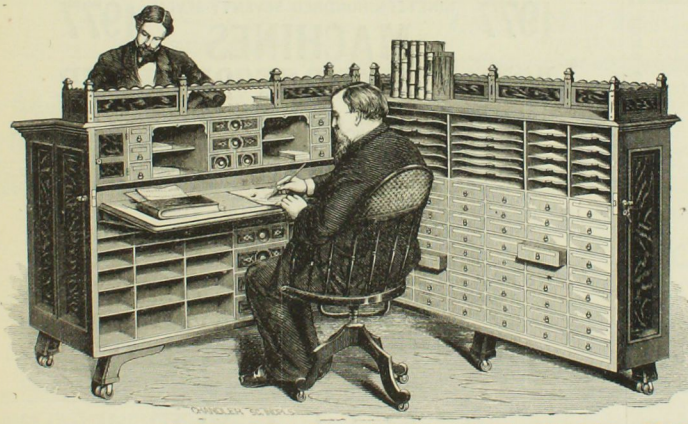
Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Montpelier & Wells River	W. A. Stowell		Montpelier, Vt.
Montrose	J. I. Blakeslee	J. I. Blakeslee	Mauch Chunk, Pa
Morgan's Louisiana & Texas	Geo. Pandeley	C. A. Whitney & Co.	New Orleans, La.
Muncy Creek	H. R. Mehrling		Hughesville, Pa.
N			
Nashua, Acton & Boston	H. E. Chamberlin		Concord, N. H
Nashua & Lowell	Chas. E. Paige	Chas. E. Paige	Nashua, N. H.
Nashville, Chattanooga & St. Louis	J. C. Wreenne		Nashville, Tenn.
Natchez, Jackson & Columbus	J. H. Fitzpatrick		Natchez, Miss.
Naugatuck	Geo. W. Beach	Geo. W. Beach	Waterbury, Conn.
Nebraska	Wm. Irving		Omaha, Neb.
Nevada Central	*Jos. Collett		Battle Mountain, Nev.
Newburg, Dutchess & Connecticut	C. L. Kimball	C. L. Kimball	Dutchess J'n, N.Y.
New Brunswick & Canada	John Stewart		St. Stephen, N. B.
New Brunswick	Tho. Hoben	T. Burpee	Gibson, N. B.
New Canaan	Wm. St. John		New Canaan, Conn.
New Castle & Franklin	A. Vandivort		New Castle, Pa.
New Haven & Derby	E. S. Quintard		New Haven, Conn.
New Haven & Northampton	C. N. Yeamans	C. N. Yeamans	New Haven, Conn.
New Jersey & New York	J. D. Hasbrouck		Jersey City, N. J.
New Jersey Southern	James Moore		119 Lib. st., N. Y.
New Orleans & Selma	T. H. Du Puy		Selma, Ala.
New Orleans, Texas & Mobile	D. B. Robinson	John J. Howell	New Orleans, La.
New York, Lake Erie & Western	*Robert Harris		New York, N. Y.
New York, Lake Erie & Western	E. S. Bowen	J. A. Hardenbergh	New York, N. Y.
New York, Lake Erie & Western	‡O. Chanute		New York, N. Y.
New York, Lake Erie & Western	**P. P. Wright		Jersey City, N. J.
Eastern Division	E. O. Hill		Port Jervis, N. Y.
Delaware Division	Benj. Thomas		Port Jervis, N. Y.
Susquehanna Division	R. R. Cable		Elmira, N. Y.
Buffalo & Rochester Div.	R. G. Taylor		Buffalo, N. Y.
Western Division	J. S. Begrs		Dunkirk, N. Y.
New York & Greenwood Lake	*Wm. P. Harris		Jersey City, N. J.
New York, New Haven & Hartford	*E. M. Reed	R. N. Dowd	New Haven, Conn.
N. Y. & N. H. Division	John T. Moody		New York, N. Y.
Hartford Division	C. S. Davidson		Hartford, Conn.
Shore Line Division	W. H. Stevenson		New Haven, Conn.
New York Central & Hudson Riv.			
Hudson River & Harlem Div.	J. M. Toucey	C. V. DeForest	New York, N. Y.
Eastern Division	Zenas C. Priest		Utica, N. Y.
Western Division	Geo. H. Burrows		Rochester, N. Y.
New York Central Division	Jas. Tillinghast		Albany, N. Y.
New York & Harlem	Chas. M. Bissell	R. C. Moore	New York, N. Y.
New York & New England	*Jas. H. Wilson	W. W. McKim	Boston, Mass.
Eastern Division			Boston, Mass.
Norwich Division	P. St. M. Andrews		Norwich, Conn.
Western Division	J. T. McManus		Hartford, Conn.
New York, Ontario & Western	*Theo. Houston		New York, N. Y.
New York, Ontario & Western	N. H. Rankin	Charles Clark	Middletown, N. Y.
Northern Division	C. W. Lanpher		Norwich, N. Y.
Southern Division	A. H. Danforth		Middletown, N. Y.
New York, Penn. & Ohio	P. D. Cooper	J. H. Holway	Cleveland, O.
First & Second Divisions	A. L. Perkins		Meadville, Pa.
Third and Fourth Divisions	T. A. Phillips		Galion, O.
Mahoning Division	J. M. Ferris		Cleveland, O.
Northern Pacific	*H. E. Sargent	E. T. Williams	St. Paul, Minn.
Northern Pacific	H. A. Towne		Brainerd, Minn.
Pacific & P. Oreille Div.	J. W. Sprague	J. W. Sprague	New Tacoma, W. T.
Missouri Division	D. A. Taylor		Mandon, Dak.
Northern of Canada	*F. W. Cumberland		Toronto, Can.
North Carolina	See Piedmont Air-Line.		
Northern Central	*Frank Thomson		Philadelphia, Pa.
Northern Central		A. W. Sumner	Baltimore, Md.
Baltimore Division	G. C. Wilkins		Baltimore, Md.
Elmira & Canandaigua Div.	J. Nelson		Elmira, N. Y.
Susquehanna Division	W. A. Baldwin		Williamsport, Pa.
Northern (New Hampshire)	George F. Todd		Concord, N. H.
Northeastern (Georgia)	Lyman Wells		Athens, Ga.
Northeastern (South Carolina)	J. F. Devine		Charleston, S. C.
North Pacific Coast	*John W. Doherty	W. F. Russell	San Francisco, Cal.
Northwestern Ohio	J. S. Morris		Toledo, O.
Northern & Northwestern	Jas. Webster		Toronto, Can.
O			
Ogdensburg & Lake Champlain	W. W. Hungerford		Ogdensburg, N. Y.
Ohio Central	G. G. Hadley		Columbus, O.
Ohio & Mississippi	W. W. Peabody		Cincinnati, O.
Ohio & Mississippi		G. E. Atwood.	St. Louis, Mo.
Eastern Division	C. B. Cole		Seymour, Ind.
Western Division	C. M. Stanton		St. Louis, Mo.
Louisville Division	C. Cole		Louisville, Ky.
Ohio & Toledo	N. A. Smith		Carrollton, O.
Old Colony	J. R. Kendrick	F. P. Moseley	Boston, Mass.
Northern Division	§S. A. Webber		Fitchburg, Mass.
Cape Cod Division	§C. H. Nye		Hyannis Mass.
Main Line Division	§J. H. French		Boston, Mass.
Olean, Bradford & Warren	J. W. Watson		Oleon, N. Y.
Omaha & Republican Valley	F. J. Nichols		Omaha, Neb.
Omaha & Northern Nebraska	J. E. House		Omaha, Neb.
Oregon & California	J. Brandt, Jr.	J. Brandt, Jr.	Portland, Oregon.
Oregon Railway & Navigation Co.	G. J. Ainsworth		Portland, Oregon.
Owensboro & Nasaville	E. Culverhouse		Owensboro, Ky.
P			
Paducah & Elizabethtown	Robert Meek		Elizabethtown, Ky.
Painesville & Youngstown	*J. A. Newcome		Youngstown, O.
Parker & Karns City	W. C. Morris		Parker City, Pa.
Peach Bottom	S. M. Manifold		York, Pa.
Paw Paw & Toledo & South Haven	John Ihling		Lawton, Mich.
Pennsylvania	*Frayleria Thomson, Enoch Lewis		Philadelphia, Pa.
Pennsylvania	Charles E. Pugh		Altoona, Pa.
Pennsylvania	**John Reilly		Altoona, Pa.
New York Division	James McTrea		Jersey City, N. J.
Amboy Division	I. S. Buckelew		Camden, N. J.
Belvidere Division	J. A. Anderson		Lambertville, N. J.
New Jersey Division	F. Wolcott Jackson		Jersey City, N. J.
Philadelphia Division	W. F. Lockard		Philadelphia, Pa.
Middle Division	S. M. Prevost		Harrisburg, Pa.
Pittsburg Division	Robert Pitcairn		Pittsburg, Pa.
Tyrone Division	S. S. Blair		Tyrone, Pa.
Bedford Division	Tho. A. Roberts		Harrisburg, Pa.
West Pennsylvania Division	E. B. Taylor		Allegheny City, Pa.
Lewistown Division	J. B. Hutchinson		Lewistown, Pa.
Pensacola & Selma	W. D. Chipley		Pensacola, Fla.
Peoria, Decatur & Evansville	G. R. Cobleigh	G. R. Cobleigh	Pekin, Ill.
Peoria & Jacksonville	*Geo. Skinner	Geo. Skinner	Peoria, Ill.
Peoria & Springfield	J. R. Hilliard		Peoria, Ill.
Petersburg	E. Sully	L. E. Clark	Petersburg, Va.
Philadelphia & Atlantic City	Ellis Clark	Ellis Clark	Philadelphia, Pa.
Philadelphia & Reading	*J. E. Wootten	W. S. Wilson	Philadelphia, Pa.
Catawissa & Williamsport Br.	D. C. Reinhart		Williamsport, Pa.
Reading & Columbia	Alex. M. Wilson		Columbia, Pa.
Lebanon & Tremont	H. W. Tracy		Pine Grove, Pa.
N. Penn. & B. Brook Divis'n	E. A. Sweigard		Philadelphia, Pa.
Philadelphia & Baltimore Central	Henry Wood	Henry Wood	Philadelphia, Pa.
Philadelphia & Erie	Wm. A. Baldwin		Williamsport, Pa.
Philadelphia & Erie		Enoch Lewis	Philadelphia, Pa.
Western Division	J. W. Reynolds		Erie, Pa.
Middle Division	E. B. Westfall		Renovo, Pa.
Eastern Division	Thomas Gucker		Williamsport, Pa.
Danv., Haz. & W. Barre Div.	Joseph Crawford		Sunbury, Pa.

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Philadelphia, Wilmington & Balt.	H. F. Kenney		Philadelphia, Pa.
Philadelphia, Newt'n & New York	L. L. Bush		Philadelphia, Pa.
Piedmont Air-Line	T. M. R. Talcott	R. H. Duesberry	Richmond, Va.
Richmond & Danville Div.	W. A. Green		Richmond, Va.
North Carolina Division	A. B. Andrews		Raleigh, N. C.
Pine River Valley & Stevens Pt.	N. L. James		Richl'nd Cent., Wis.
Pittsburg & Castle Shannon	A. C. Hays		Pittsburg, Pa.
Pittsburg & Lake Erie	R. W. Jones		Pittsburg, Pa.
Pittsburg, Cincinnati & St. Louis	S. M. Felton, Jr.	William Mullins	Pittsburg, Pa.
Pittsburg, Cincinnati & St. Louis	*D. W. Caldwell		Columbus, O.
Pitts., Cin. & St. Louis Div.	J. H. Barrett		Pittsburg, Pa.
Col., Cin. & Ind., Cent. Div.	J. Hill		Logansport, Ind.
Col., Cin. & Ind., Cent. Div.	J. F. Miller		Richmond, Ind.
Indianap. & Vincennes Div.	E. W. McKenna		Indianapolis, Ind.
Cincin. & Musk. Valley Div.	C. C. Waite		Zanesville, O.
Little Miami Div.	J. D. Ellison		Cincinnati, O.
Pittsburg, Ft. Wayne & Chicago	*J. D. Layng	William Mullins	Pittsburg, Pa.
Pittsburg, Ft. Wayne & Chicago	‡C. E. Gorham		Chicago, Ill.
Eastern Division	George S. Griscom		Pittsburg, Pa.
Western Division	C. D. Gorham		Fort Wayne, Ind.
Pittsburg & Western	J. A. Banner		Harmony, Pa.
Pittsburg, Titusville & Buffalo	Tho. H. Wilson		Oil City, Pa.
Pittsburg, Titusville & Buffalo		John L. Awl	Indianapolis, Ind.
Pittsburg, Virginia & Charleston	J. M. Byers		Pittsburg, Pa.
Port Dover & Lake Huron	A. B. Atwater		Woodstock, Ont.
Port Royal & Augusta	R. G. Fleming		Port Royal, S. C.
Portland & Ogdensburg	Jonas Hamilton	Jonas Hamilton	Portland, Me.
Portland & Rochester	G. P. Wescott, *Rec.*		Portland, Me.
Potomac, Fredericksb'h & Piedt.	Charles Kennedy		Fredericksb'h, Va.
Poughkeepsie, Hartford & Boston	J. A. Perkins	A. W. Cable	Poughkeepsie, N.Y.
Prince Edward Island	Alex. McNabb	Alex. McNabb	Charlottet'n, P.E.I.
Prospect Park & Coney Island	R. Schermerhorn		Coney Island, N.Y.
Providence & Springfield	William Tinkham	William Tinkham	Providence, R. I.
Providence & Worcester	W. E. Chamberlain		Providence, R. I.
Providence, Warren & Bristol	Waterman Stone		Providence, R. I.
Q			
Quebec, Mont., Ott'a & Occidental	L. A. Senecal	W. E. Blumhart	Montreal, Can.
Quebec Central	§A. Steele		Sherbrooke, Can.
Queen Anne & Kent County	P. H. Irwin		Centreville, Md.
Quincy, Missouri & Pacific	F. D. Schermerhorn		Quincy, Ill.
R			
Raleigh & Augusta Air-Line	J. C. Winder		Raleigh, N. C.
Raleigh & Gaston	J. C. Winder		Raleigh, N. C.
Rhinebeck & Connecticut	J. H. Jones		Rondout, N. Y.
Richmond, York Riv. & Chesap'ke	H. T. Douglas	B. S. Crouch	Richmond, Va.
Richmond & Danville	(See Piedmont Air-Line).		
Richmond, Frederick'b & Potomac	E. T. D. Myers	T. L. Courtney	Richmond, Va.
Richmond & Petersburg	Theo. D. Kline		Richmond, Va.
Rio Grande	*M. J. Gomila		Brownsville, Tex.
Rochester & State Line	J. E. Childs	J. E. Childs	Rochester, N. Y.
Rockwood & Tennessee River	H. Clay Evans		Rockwood, Tenn.
Rock Island & Mercer County	*R. R. Cable		Rock Island, Ill.
Rock Island & Peoria	R. R. Cable	R. R. Cable	Rock Island, Ill.
Rome	Eben Hillyer		Rome, Ga.
Rome, Watertown & Ogdensburg	E. A. Van Horne		Watertown, N. Y.
Rome, Watertown & Ogdensburg		G. W. B. Cushing	New York City.
Rumford & Buckfield	O. Hayford		Canton, Me.
S			
Scioto Valley	Joseph Robinson		Columbus, O.
St. Croix & Penobscot	Wallace Haycock		Milltown, Me.
St. Lawrence & Ottawa	†Tho. Reynolds	Tho. Reynolds	Ottawa, Can.
St. Johns	*R. McLaughlin		Jacksonville, Fla.
St. Johns & Indian River	W. H. Churchill		Titusville, Fla.
St. John & Maine	H. D. McLeod		St. John, N. B.
St. Johnsbury & Lake Champlain	A. B. Jewett		St. Johnsbury, Vt.
St. Joseph & Des Moines	J. F. Barnard		St. Joseph, Mo.
St. Joseph & Western	L. D. Tuthill		St. Joseph, Mo.
St. Joseph & Western		A. D. Clarke	Omaha, Neb.
St. Louis, Alton & Terre Haute	Beriah Warren	Beriah Warren	St. Louis, Mo.
St. Louis, Hannibal & Keokuk	W. W. Walker		Hannibal, Mo.
St. Louis, Iron Mountain & Southern	Arthur W. Soper	W. S. Cuddy	St. Louis, Mo.
Texas Division	J. W. Brown		Texarkana, Texas
Missouri Division	Wm. Kerrigan		St. Louis, Mo.
St. Louis & San Francisco	*C. W. Rogers	C. W. Rogers	St. Louis, Mo.
Kansas Division	W. A. Thomas		Oswego, Kan.
St. Louis, Keokuk & Northwest'n	A. L. Griffin	John A. Blood	Keokuk, Ia.
St. Louis, Salem & Little Rock	E. B. Sankey		Salem, Mo.
St. Louis, Salem & Little Rock		H. A. Crawford	St. Louis, Mo.
St. Louis Bridge Co. & Tunnel R.R.	J. B. Van Dyne	E. J. Williams, Jr.	St. Louis, Mo.
St. Paul & Duluth	Geo. H. Smith		St. Paul, Minn.
St. Paul, Minneapolis & Manitoba	*Jas. J. Hill	J. C. Morrison	St. Paul, Minn.
St. Paul, Minneapolis & Manitoba	B. Wakeman		St. Paul, Minn.
St. Paul & Sioux City	E. W. Winter		St. Paul, Minn.
St. Paul, Stillwater & Taylor's Falls			St. Paul, Minn.
Sacramento & Placerville	Josiah Johnson		Sacramento, Cal.
Saginaw Valley & St. Louis	N. W. Merrill	N. W. Merrill	Saginaw, Mich.
San Francisco & North Pacific	*A. Hughes	A. Hughes	San Francisco, Cal.
San Francisco & North Pacific	H. C. Whiting	P. E. Dougherty	Petaluma, Cal.
San Rafael & San Quentin	David Nye		San Rafael, Cal.
Savannah, Florida & Western	*H. S. Haines	W. B. McKee	Savannah, Ga.
Savannah & Memphis	*G. J. Foreacre		Atlanta, Ga.
Seaboard & Roanoke	J. M. Robinson	J. A. Walton	Baltimore, Md.
Selma & Greensboro	A. M. Fowlkes		Selma, Ala.
Selma, Rome & Dalton	*Rudolph Fink		Selma, Ala.
Sheboygan & Fond du Lac	E. J. Cuyler		Fond du Lac, Wis.
Shenango & Allegheny	J. T. Blair		Greenville, Pa.
Shepaug	C. H. Platt		Litchfield, Conn.
Sioux City & Pacific	F. C. Hills		Missouri Valley, Ia.
Sioux City & Pacific	*P. E. Hall	P. E. Hall	Cedar Rapids, Ia.
Skaneateles	J. McNamara		Skaneateles, N. Y.
South Carolina	John P. Peck	S. B. Pickens	Charleston, S. C.
Southeastern of Canada	H. A. Alden		Newport, Vt.
Southern Central	Jas. G. Knapp		Auburn, N. Y.
South Mountain	W. H. Woodward		Pine Grove Furnace, Pa.
Southern Pacific	A. C. Bassett	John R. Watson	San Francisco, Cal.
Los Angeles & Yuma Div.	§E. E. Hewitt		Los Angeles, Cal.
Tulare Division			Oakland, Cal.
South Pacific Coast	F. W. Bowen		San Francisco, Cal.
Southwestern of Georgia	W. G. Raoul		Macon, Ga.
Southwestern of Kentucky	M. Tabler		Harrodsburg, Ky.
Spartanburg, Union & Columbia	Jas. Anderson	Jas. Anderson	Spartanburg, S. C.
Spartanburg & Asheville	Jas. Anderson	Jas. Anderson	Spartanburg, S. C.
Springfield & Western Missouri	F. Oakes		Springfield, Mass.
Springfield & Northwestern	E. B. Hyde	E. B. Hyde	Springfield, Ill.
Springfield Southern	Wm. Thornburg	G. A. Barnes	Springfield, O.
Springfield & Western Missouri	F. Oakes		Kansas City, Mo.
Springfield & Parsboro	J. A. Killam		Parsboro, N. S.
State Line & Sullivan	J. O. Blight		Towanda, Pa.
Staten Island	John W. Wilber		Tottenville, N. Y.
Sterling Mountain	J. C. Missimer		Sloatsburg, N. Y.
Stonington & Providence	J. B. Gardiner		Providence, R. I.
Stonington & Providence		Giles F. Ward	Stonington, Conn.
Summit Branch	R. C. Peebles		Lykens, Pa.
Summit County	W. M. Riter		Coalville, Utah.
Sussex	E. C. Case	E. C. Case	Newtown, N. J.
Syracuse, Binghamton & N. Y.	W. K. Niver		Syracuse, N. Y.
Syracuse, Binghamton & N. Y.		G. W. B. Cushing	New York, N. Y.
Syracuse, Chenango & New York	Albert Allen		Syracuse, N. Y.
Syracuse, Geneva & Corning	A. H. Gorton	Andrew Beers	Corning, N. Y.

Railroad.	Superintendent.	Purchasing Agent.	Residence.
T			
Tennessee & Pacific	J. W. Thomas		Nashville, Tenn.
Terre Haute & Ind'apolis } Van- {	N. K. Elliott		St. Louis, Mo.
Terre Haute & Ind'apolis } dalia {	Joshua Staples		Indianapolis, Ind.
Terre Haute & Ind'apolis } Line. {		C. R. Peddle	Terre Haute, Ind.
Logansport Division			Logansport, Ind.
Terre Haute & Southeastern	George Atherton		Terre Haute, Ind.
Texas & New Orleans	C. A. Burton	P. B. Watson	Houston, Tex.
Texas & Pacific	Geo. Noble	Geo. Noble	Marshall, Tex.
Jefferson Division	J. S. Noble		Texarkana, Tex.
Southern Division	C. Harris		Marshall, Tex.
Texas Western	J. W. Goodwin		Houston, Tex.
Texas & St. Louis	E. F. Stephen		Tyler, Tex.
Tioga & Elmira State Line	L. H. Shattuck		Elmira, N. Y.
Toledo, Delphos & Burlington	J. H. Burgoon		Delphos, O.
Dayton Division	J. O. Arnold		Dayton, Ohio.
Toledo & Ann Arbor	J. S. Morris		Ann Arbor, Mich.
Toledo, Peoria & Western	W. F. Merrill	W. F. Merrill	Peoria, Ill.
Troy & Boston	E. E. Aldrich	D. Robinson	Troy, N. Y.
Toronto, Grey & Bruce	*Edmund Wragge	W. Watson	Toronto, Can.
Toronto & Nipissing	John Duncan	John Symons	Toronto, Can.
Tuckerton	J. J. Pharo	J. C. Ridgeway	Tuckerton, N. J.
U			
Ulster & Delaware	Geo. Coykendall		Rondout, N. Y.
Union Pacific	*S. H. H. Clarke	A. D. Clark	Omaha, Neb.
Union Pacific	‡Jas. T. Clarke		Omaha, Neb.
Eastern Division	P. J. Nichols		Omaha, Neb.
Western Division	W. B. Doddridge		Evanston, Wy. T.
Mountain Division	Robert Law		Cheyenne, Wy. T.
Laramie Division	Edw. Dickinson		Laramie, Wy. T.
Colorado Division	A. A. Egbert		Denver, Col.
Union R. R. Trans. & S. Yard Co	*M. A. Downing	**Albert Scott	Indianapolis, Ind.
Utah Central	John Sharp	S. H. Hill	Salt Lake City.
Utah Northern	Geo. W. Thatcher		Logan, Utah.
Utah Western	*W. W. Riter	W. W. Riter	Salt Lake City.
Utica & Black River	J. F. Maynard		Utica, N. Y.
Utica, Ithaca & Elmira	Geo. J. Rice	J. L. Greatsinger	Horse Heads, N. Y.
V			
Valley	Samuel Briggs	Samuel Briggs	Cleveland, O.
Vicksburg & Brunswick	W. G. Raoul		Macon, Ga.
Vermont Valley	John Mulligan		Springfield, Mass.
Vicksburg & Meridian	E. F. Raworth	E. F. Raworth	Vicksburg, Miss.
Vicksburg, Shreveport & Pacific	*J. W. Green	J. W. Green	Monroe, La.
Virginia & Truckee	H. M. Yerington	C. P. Mason	Carson, Nev.
W			
Wabash, St. Louis & Pacific	*John C. Gault		St. Louis, Mo.
Eastern Division	R. Andrews		Toledo, O.
Western Division	Thos. McKissock	R. W. Green	St. Louis, Mo.
Illinois Division	H. F. Clark		Springfield, Ill.
Ohio & Indiana Division	K. H. Wade		Fort Wayne, Ind.
St. L., K. C. & N	W. H. Selby		Moberly, Mo.
Council Bluffs & Omaha Div	J. W. Blanchard		Stanberry, Mo.
Wabash, Chester & Western	J. L. Hinkley		Chester, Ill.
Wallkill Valley	J. H. Jones		Rondout, N. Y.
Washington & Ohio	R. H. Havener	R. H. Havener	Alexandria, Va.
Wash. City, Va. Mid. & G. South'n	Peyton Randolph		Alexandria, Va.
Watkon & Mississippi	F. O. Wyatt		Dubuque, Ia.
Waynesburg & Washington	Jacob Swart		Waynesburg, Pa.
Welland	William Pay		St. Catherine, Ont.
Westchester & Philadelphia	Henry Wood	Henry Wood	Philadelphia, Pa.
West Feliciana	J. B. McGehee		Laurel Hill, La.
West Jersey	W. J. Sewell		Camden, N. J.
Western of Alabama	*Cecil Gabbett	Cecil Gabbett	Montgomery, Ala.
Western of North Carolina	L. C. Jones		Fayetteville, N. C.
Western & Atlantic	Wm. McRae	W. R. Webster	Atlanta, Ga.
Western Maryland	*J. M. Hood		Baltimore, Md.
Western North Carolina	A. B. Andrews		Asheville, N. C.
Whitewater	W. W. Worthington		Ft. Wayne, Ind.
Whitby, Port Perry & Lindsay	*Jas. Holden		Whitby, Ont.
Wicomoco & Pocomoke	H. R. Pitts		Berlin, Md.
Williamstown	J. F. Bodine		Williamstown, N.J.
Wilmington, Columbia & Augusta	J. F. Divine	J. F. Divine	Wilmington, N. C.
Wilmington & Northern	J. H. Thompson		Coatesville, Pa.
Wilmington & Weldon	J. F. Divine	J. F. Divine	Wilmington, N. C.
Windsor & Annapolis	*P. Innes		Kentville, N. S.
Wisconsin Central	*F. N. Finney	J. W. Curtiss	Milwaukee, Wis.
Mil. & Eastern Div	C. F. Dutton		Milwaukee, Wis.
So. Mid. & Northern	G. Campbell		Steven's Point, Wis.
Wisconsin Valley	F. O. Wyatt		Tomah, Wis.
Woodstock	J. G. Porter		Woodstock, Vt.
Worcester & Nashua	C. S. Turner	C. S. Turner	Worcester, Mass.
Worcester & Shrewsbury	J. F. Bigelow		Worcester, Mass.
Worcester & Somerset	F. J. Painter		Philadelphia, Pa.
Y			
Youghiogheny	Wm. Wilson		Irwin's, Pa.

MOORE'S PATENT COMBINATION CABINETS.

THE RAILWAY KING.



REFERENCES.

H. B. HAMMOND, Pres. I., D. & S. Railway Indianapolis.

GEN. BEN HARRISON, Indianapolis.

GEN. DAN MACAULEY, Indianapolis.

HENRY W. GWINNER, Asst. Pass. Receipts Penn. R. R. Co., Phila., Pa.

HON. WM. C. BURCHARD, U. S. Consul, Honduras, Central America.

GEN. P. PEASE, Supt. Ohio Cent. Railway Columbus O.

GEN. SAMUEL THOMAS, Gen. Manager Rolling Mill Co., Columbus, O.

JOSE GUILHERME KOPKE CORREA PINTO, Para, Brazil, S. A.

THE JACKSON & WOODIN MFG. CO., Berwick, Pa.

EDMUND RICE, St. Paul & Pacific Ry., St. Paul, Minn.

REV. THEO. A. BALDWIN, Constantinople, Turkey.

JOHN P. WHITEHEAD, Auditor A., T. & S. F. R. R, Topeka, Kan.

THE MONARCH OF THE WORLD.

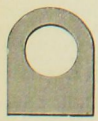
We are prepared to furnish a complete line of the most thoroughly practical business desks manufactured. For further information, address, with stamp,

THE MOORE COMBINATION DESK COMPANY.

82 East Market Street, Indianapolis.

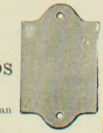
VULCANIZED FIBRE COMPANY,

SOLE MANUFACTURERS OF



HARD AND FLEXIBLE VULCANIZED FIBRE.

FLEXIBLE VULCANIZED FIBRE DUST GUARDS AND OIL-BOX COVERS,



being absolutely unaffected by oil or heat, are far more durable and efficient than Leather, and much cheaper.

OFFICE AND WORKS: WILMINGTON, DEL.

National Car-Builder

FOR ONE YEAR, WITH

CAR-BUILDERS' DICTIONARY

$2.50.

Address NATIONAL CAR-BUILDER,

5 DEY STREET,

W. D. WOOD & CO'S

PATENT

PLANISHED SHEET IRON.

Patented March 14, 1865; April 8, 1873; Sept. 9, 1873; Oct. 6, 1874; Jan. 11, 1876.

Guaranteed fully equal, in all respects, to the

IMPORTED RUSSIA IRON,

And at a much less price.

Locomotive Jacket Iron

Our Specialty.

FOR SALE

By all the principal

METAL DEALERS

In the large cities throughout

THE UNITED STATES,

And at their Office,

111 Water Street, Pittsburgh, Pa.

THE

NATIONAL CAR-BUILDER

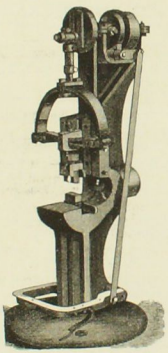
will be sent for one year, with

CAR-BUILDERS' DICTIONARY,

for $2.50.

Dead-Stroke Hammer,

Five Hundred Now in Use on Die Work and General Forging.



More Effective than Steam Hammers; Simple and Durable.

MANUFACTURED BY

PHILIP S. JUSTICE,

14 North Fifth Street,

PHILADELPHIA, PA.

HARRISBURG

CAR MANUFACTURING COMPANY

MANUFACTURE

PASSENGER, MAIL, BAGGAGE,

BOX, GONDOLA, COAL

AND ALL OTHER KINDS OF

RAILROAD CARS;

Railroad Car Wheels and Castings, Bridge and Rolling Mill Castings, Bridge Rods, Bolts and

RAILROAD FORGINGS.

J. H. MONTEATH,

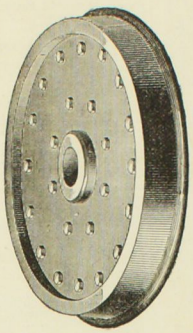
Importer and Dealer in

MAHOGANY AND FANCY WOODS.

Office: No. 151 Centre St., New York.

Special Inducements to Car-Builders.

ALLEN PAPER CAR WHEEL CO.,



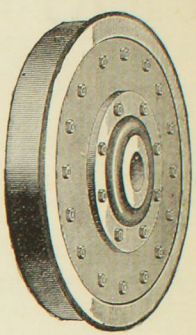
GENERAL OFFICES:

240 BROADWAY, NEW YORK.

ALL SIZES.

PAPER CAR WHEELS.

MANUFACTURERS OF ALLEN'S PATENT



Especially adapted for Sleeping and Drawing-Room Cars, Locomotive and Tender Trucks. Steel Tire with Annular Web—Strongest, Most Durable, and Most Economical Wheel in use. Works at Hudson, New York; additional ones soon to be erected in Chicago

A. G. DARWIN, President. R. N. ALLEN, Gen'l Supt.

Samples may be seen in THE RAILWAY AGE EXHIBITION ROOM.

$ $ $ $ **SAVED** $ $ $ $

1977 NINETEEN HUNDRED SEVENTY-SEVEN 1977

MACHINES

BOTH NEW AND SECOND-HAND

COMPRISING

MACHINE AND BLACKSMITH TOOLS OF EVERY DESCRIPTION. WOOD-WORKING MACHINERY IN ALL ITS BRANCHES. PORTABLE ENGINES. UPRIGHT and HORIZONTAL STATIONARY ENGINES, 1 TO 300 HORSE POWER. **S.C.F.&CO.** LOCOMOTIVE FIRE-BOX, HORIZONTAL, and UPRIGHT BOILERS, 1 TO 100 HORSE POWER. WATER WHEELS, COTTON AND WOOLEN MACHINERY, STEAM PUMPS, GRISTMILL MACHINERY, Etc., FULLY DESCRIBED, AND PRICES ANNEXED,

☞ Send stamp for same.] In our List No. 23. [stating what you want. ☜

We have the Largest Assortment of Machinery to be found in the hands of any firm in the country.

Works and Main Office, Manchester, N. H.

S. C. FORSAITH & CO.

Branch Office and Wareroom, 209 Center street, New York City.

CHILLED

CAR WHEEL GRINDING COMPANY

Patented in U. S. July 8, 1879.
Patented in Dominion of Canada, June 13, 1879.

By J. H. GOWAN.

A sound Chilled Car Wheel trued by our method cannot be excelled by any other description of Car Wheel with steel tire.

We guarantee as follows:

First.—Our machine will true one pair of new Chilled Car Wheels per hour, or ten pairs per day of ten hours. Average cost of emery per new Car Wheel, eight cents. Average cost of emery per old Car Wheel, sixteen cents.

Second.—Any person having a slight acquaintance with tools may, after five hours' instruction, become thoroughly competent to operate our machine.

Third.—Additional comfort to the traveling public resulting from the adoption of a perfect Car Wheel.

For further particulars, Price of Machine, and Terms of Royalty, please communicate with the

CHILLED CAR WHEEL GRINDING COMPANY,

CHICAGO, ILL., Box 382. CARSON, NEV., P. O. Box 55.

Reference: H. M. YERINGTON, General Superintendent Virginia & Truckee Railroad, Carson, Nev.

H. M. YERINGTON, President. **J. H. GOWAN, Superintendent.**
HARRY HUNTER, Vice-President. **C. P. MASON, Secretary.**

CARPETS

A SPECIALTY.

W. & J. SLOANE

Have a large line of Superior Carpetings suitable for furnishing Parlor and Sleeping Cars.

ALSO

OIL CLOTH,
COCOA and
ROPE MATS,
MATTING,
RUBBER MATS.

649, 651 and 655
BROADWAY, N. Y.

NATIONAL CAR-BUILDER

FOR ONE YEAR, WITH
CAR-BUILDERS' DICTIONARY,
$2.50.

Address NATIONAL CAR-BUILDER,
5 DEY STREET.

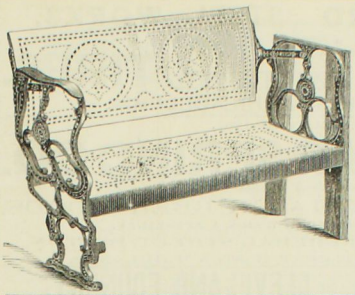
L. H. TAYLOR, Pres.
S. P. RABER, Sup't. J. H. WALKER, Sec. and Treas.

TAYLOR IRON WORKS,

High Bridge, N. J.,

MANUFACTURERS OF

Chilled Iron Car-Wheels, Steel-Tired Wheels, Car and Locomotive Axles and Draw Hooks.



HERZ & CO.,

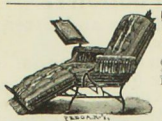
Original Patentees and Manufacturers of

All Three-Ply Veneer Seatings,
Ceilings, &c.

We are making both the Reversible Car-Seat and back Combined, or Stationary Seat with Reversible Back. For Seatings of all kinds and descriptions, please apply to us for Estimates before purchasing elsewhere.

We are also the sole Patentees for Car Ceilings, of two or more ply veneer, of all kinds, and herewith warn all persons from infringing on our Patent.

HERZ & CO.,
313, 315, 317, 319 & 321
East Twenty-second St.
NEW YORK CITY.



The Marks' Improved Adjustable Folding Chair.

Fully indorsed as the BEST chair ever produced, combining, as it does, a CHAIR, BED, CHILD'S CRIB, INVALID RECLINING and LIBRARY CHAIR, and capable of being adjusted by the occupant to any position desired for ease and comfort. **Marks' Railroad Reclining Chair a Specialty.** Send for catalogue and price-list to

MARKS' ADJUSTABLE FOLDING CHAIR CO.,
Sole Proprietors and Manufacturers. 850 Broadway, New York.

MORSE TWIST DRILL AND MACHINE COMPANY

MANUFACTURES

Patent Twist Drills, Machine Bits for Wood, Bit Stock Drills, Reamers, Standard Gauges, Milling Cutters and Special Tools, for use in Railroad, Car and Locomotive Shops. NEW BEDFORD, MASS.

THE BEST AND Cheapest Fence FOR RAILROADS.

WASHBURN & MOEN MANUFACTURING CO.

WORCESTER, MASS.

MANUFACTURERS OF

PATENT STEEL BARB FENCING.

UNAFFECTED BY FIRE, WIND OR FLOOD.

TRADE-MARKS.

"*Phosphor-Bronze.*"

PHOSPHOR-BRONZE,

For Locomotive and Car Bearings, Slide Valves, etc.

The most ECONOMICAL and DURABLE and the LIGHTEST RUNNING METAL IN THE MARKET. SAVES OIL and REPAIRS, PREVENTS DELAYS to trains and NEVER CUTS THE JOURNALS.

Address THE PHOSPHOR-BRONZE SMELTING CO., Limited, 2038 Washington avenue, Philadelphia, Pa., Sole Manufacturers of Phosphor-Bronze in the United States, owners of the U. S. Phosphor-Bronze Patents.

J. BERNARD,

MANUFACTURER OF

Marqueterie of every description; dealer in French Walnuts, Colored and any other Veneers, especially adapted for Car-Work.

161 Greene Street, New York.

H. L. LEACH,

Agent for NASHUA IRON & STEEL CO.

LOCOMOTIVE TIRES,

Car Axles, Locomotive, Mill and Other Forgings.

77 WATER ST., BOSTON, MASS.

C. C. C. W.

CAYUTA CHILLED CAR WHEELS,

MANUFACTURED BY

CAYUTA WHEEL AND FOUNDRY COMPANY,
WAVERLY, N. Y.,
SAYRE, PA.
REGINALD CANNING, Superintendent.
A. B. HULL, President

NO MORE HOT BOXES!

EAGLE CAR-BOX LUBRICATOR COMPANY.

We can give the highest of references, including some of the best roads in the United States. We claim that our compound is a perfect cooler; saves brasses, and trouble and annoyance of frequent greasing. This is abundantly proved by our continual orders from railway companies, who are deriving the greatest satisfaction from its use.

We sell in quantities of from five barrels to car loads, and no charge is made unless it proves satisfactory.

TRADE MARK.

We also manufacture the EAGLE MACHINERY AND CUP COMPOUND, which takes the place of Sperm and Lard Oil. It has been tested in Navy Yards and Engine and Machine Shops. Pamphlets explain further.

Address A. G MANDEL, General Manager, P. O. Box 2555; Office, 26 Burling Slip, New York.

THE STANDARD STEEL WORKS.

LOCOMOTIVE AND CAR WHEEL **TIRES.**

220 S. FOURTH ST., PHILADELPHIA.

INCORPORATED 1867.

BOSTON CAR SPRING CO.

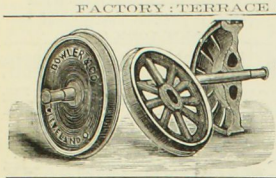
MANUFACTURERS OF ALL KINDS OF

VULCANIZED INDIA RUBBER GOODS.

CAR SPRINGS AND MOULDED GOODS A SPECIALTY.

SALES-ROOM, No. 60 FEDERAL STREET, BOSTON.

FACTORY: TERRACE STREET, BOSTON HIGHLANDS.



CLEVELAND FOUNDRY.

Car Wheels of all Kinds and Sizes,

WITH OR WITHOUT AXLES.

CHILLED-FACED RAILROAD FROGS.

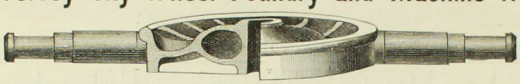
Street Railroad Turnouts.

ROLLING MILL AND MACHINERY CASTINGS.

Nos. 9, 11 and 13 Winter Street, Cleveland, Ohio.

BOWLER & CO.

The Jersey City Wheel Foundry and Machine Works.

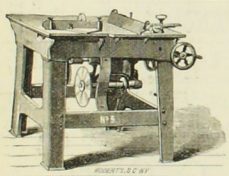


CHILLED AND STEEL-TIRED CAR WHEELS.

NEW YORK OFFICE: 52 WALL ST., ROOM 8.

ALL WORK GUARANTEED.

J. F. BAILEY, President. THEODORE THOMAS, Treas. and Gen. Agent. CHAS. D. DAVIS, Secretary.



No. 3 Wardwell Saw Bench.

ROLLSTONE MACHINE CO.

Wardwell Saw Benches a specialty.

These machines are in use in the car-shops of the Penn. R. R., B. & O., P. W. & B. B. & A. F. R., Mich. Central, and some fifty other of the largest shops in the country

ALSO, A HEAVY BAND SAW FOR CAR WORK.

ROTARY, STATIONARY, BED AND BUZZ PLANERS,

And a large number of other machines for car work.

We are dealers in all kinds of Second Hand

Machinery, Engines, Boilers, Iron and Wood Working Machinery.

Do not buy until you send for new descriptive list, stating just what you want, inclosing stamp.

ROLLSTONE MACHINE CO., FITCHBURG, MASS.

VERONA TOOL WORKS,

MANUFACTURERS OF

RAILROAD TRACK TOOLS, THE PATENT VERONA NUT-LOCK,

AND

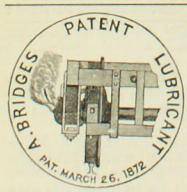
THE PATENT VERONA SPRING WASHERS.

These SPRING WASHERS will be found very valuable in Cars, Locomotives, and Bridges, or any place where it is desired to have a tight nut.

We are prepared to fill orders in any quantity.

METCALF, PAUL & CO.,

CHICAGO OFFICE: 40 DEARBORN STREET. PITTSBURGH, PA.



HOT JOURNALS ENTIRELY PREVENTED BY THE USE OF

Bridges' Patent Lubricant

for Railroad Car Journals and other Bearings. Lubricator and Counteractor of Friction. It has been in use, during the past two years, on a number of Railroads and Steamers, and is highly approved of. Parties wishing to make a practical test of the Lubricant will be furnished with sample on application.

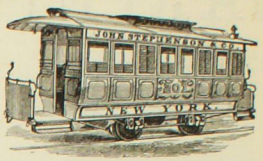
ALBERT BRIDGES, Patentee,

MANUFACTURER AND DEALER IN

Railway, Steam-Fitters' and Plumbers' Supplies.

No. 46 Cortlandt Street, New York.

John Stephenson & Co.,



STREET CARS

Of every Variety, and combining all Valuable Improvements.

Particular Attention Given to Shipment.

THE

STANDARD LUBRICATING OIL

OF AMERICA

FOR RAILROADS

GALENA

Engine Coach and Car Oil.

Gravity, 26°, 27°, 28°, 29°. Cold Test, 10° to 15° below zero.

No freezing in coldest weather, and entire freedom from hot journals at any time, as its exclusive use upon a majority of the leading railroads has demonstrated.

Showing Better Results than any Oil Extant.

REFERENCES FURNISHED ON APPLICATION.

GALENA OIL WORKS,

(LIMITED),

FRANKLIN, PA.

Important to Railroad Managers and Master Mechanics.

SIBLEY'S PERFECTION VALVE OIL.

More perfect lubrication insured, and entire freedom guaranteed from corrosion of cylinders and destruction of steam joints by fatty acids.

In exclusive use on 50 railroads.

References and prices furnished upon application.

☞ **Make exclusive specialty of the Manufacture of Valve and Signal Oils for Railroad use.**

SIGNAL OIL WORKS,

FRANKLIN, PA.

J. C. SIBLEY, President.

THIS HAMMER

Awarded the First Premium of a Silver Medal

AT THE

American Institute Fair, N. Y. City, Nov., 1873.

Superior in every point to any modification of the Trip Hammer.

SIMPLE, POWERFUL,

EFFICIENT AND CHEAP.

Four Sizes now being Built.

For Prices and Descriptive circulars, address the manufacturers,

S. C. FORSAITH & CO.,

Manchester, N. H.,

Who are also builders of the

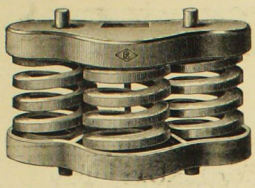
Abbe Bolt-Heading Machine.

CLIFF & RIGHTER,

WEST BERGEN

Car Spring Works.

PENNSYLVANIA BOLSTER SPRING.

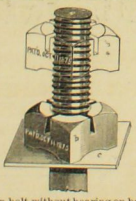


WIDTH, - - - - - - - 11½ INCHES
HEIGHT, - - - - - - - 6¼ INCHES
WEIGHT, - - - - - - - 40 POUNDS
CAPACITY OF EACH SPRING, 18,000 POUNDS

REPRESENTED BY

CURRAN DINSMORE,
AND
CHARLES D'W. GIBSON,
NO. 5 DEY ST., NEW YORK.

Atwood Safety Nut Co., Springfield, Mass.



J. W. LARABEE, Treasurer.

a, ATWOOD NUT on bolt without bearing on base—slots open. *b*, ATWOOD NUT turned to bearing *c*, partially closing the slots and grasping the bolt.

STEEL CASTINGS,

From ½ lb. to 20,000 lbs. weight.

Of superior quality, sound, homogeneous and free from sand and blow holes.

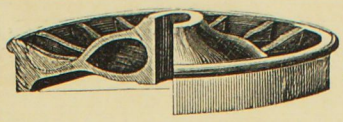
ADAPTED FOR

Locomotive Cross-Heads, Links, Rocker-Arms, etc., etc., and suited for Passenger and Freight Cars.

SPECIALTIES.

Propeller Wheels, Crank Shafts, Hydraulic Cylinders, Large and Small Gearing and Pinions, etc., etc.

EUREKA CAST STEEL CO.,
Office, No. 307 Walnut Street, Philadelphia.



WASON
MANUFACTURING COMPANY

SPRINGFIELD, MASS.,

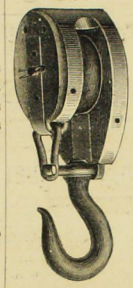
BUILDERS OF

RAILWAY CARS OF ALL DESCRIPTIONS,

CAR WHEELS AND RAILWAY CASTINGS.

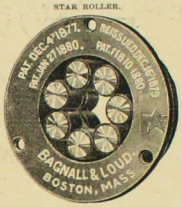
H. S. HYDE, Treasurer. G. C. FISK, President.

IMPROVED SNATCH BLOCK.

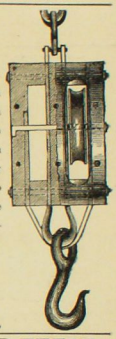


METALINE AND STAR ROLLER BUSHED TACKLE BLOCKS.

STAR ROLLER.



These celebrated make of Tackle Blocks are making a wide reputation for themselves throughout the United States on account of their *greater durability* and ease in hoisting over all other kinds now in the market. These, together with our Improved Snatch Blocks, etc., are worthy the attention of all Purchasing Agents, who will do well to inspect these goods before purchasing elsewhere.



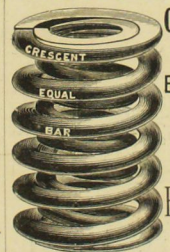
☞ SEND FOR CIRCULARS OF OUR LATEST STYLES.

NEW YORK AGENCY, 33 SOUTH STREET.

BAGNALL & LOUD, 139 Fulton Street, Boston.

MILLER, METCALF & PARKIN,
CRESCENT STEEL WORKS,

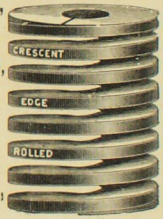
MANUFACTURERS OF



Equal Bar Nest, Crescent Edge-Rolled,
Round Bar Nest, Flat Bar Nest,
Group Spiral. Volute,

AND OTHER

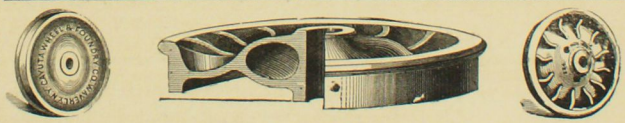
RAILWAY CAR SPRINGS,



81 Wood Street, Pittsburgh, Pa.,

1232 MARKET ST., Philadelphia. 178½ WATER ST., New York.

40 DEARBORN ST., Chicago.



RAMAPO WHEEL & FOUNDRY CO.,

MANUFACTURERS OF

Chilled Wheels for Drawing-Room and Sleeping Coaches,

LOCOMOTIVES, TENDERS, PASSENGER AND FREIGHT CARS.

GEO. CHURCH, Pres't and Treasurer. W. W. SNOW, Sup't and Gen'l Manager.

RAMAPO ROCKLAND COUNTY N. Y

PARROTT VARNISH COMPANY,

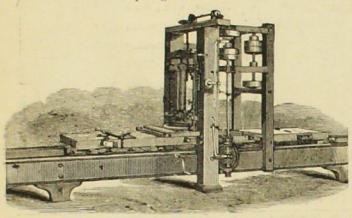
MANUFACTURERS OF FINE

RAILWAY VARNISHES,

BRIDGEPORT, CONN.

DANIEL'S PLANERS.

The cut below represents the most perfect Dimension Wood-Planing Machine in use. It is made to true out, square up and bevel with the utmost precision hard and soft wood any length or width.



WOOD-WORKING MACHINERY,

MANUFACTURED BY

WITHERBY, RUGG & RICHARDSON, WORCESTER, MASS.,

26 SALISBURY ST. (Shop formerly occupied by R. BALL & CO.)

SPECIALTIES:

Woodworth Planing, Tongueing & Grooving Machines,

DANIEL'S PLANERS,

RICHARDSON'S PATENT IMPROVED TENON MACHINES,

Mortising, Molding, Re-saw and Band Saw Machines, Picture Frame and Miter Cutting Machines, Box Machinery,

PATENT DOUBLE SAW BENCHES, SAW TABLES, &c.

WALLACE & SONS,

BRASS AND COPPER ROLLING MILLS.

SEAMLESS BRASS & COPPER TUBES;

ALSO

SHEET AND BOLT COPPER, BRASS, WIRE, Etc., Etc.

89 Chambers and 71 Reade Streets,

NEW YORK.

EX INUTILI TRADE TANITE MARK UTILITAS

EMERY WHEELS AND GRINDING MACHINES.

THE TANITE CO.,

Stroudsburg, Monroe County, Pa.

Orders may be directed to us at any of the following addresses, at each of which we carry a stock:

London, Eng., 9 St. Andrews St., Holburn Viaduct, E. C.
Liverpool, Eng. 42, The Temple, Dale St.
Sydney, N. S. W., 11 Pitt St.
New York, 14 Dey St.
Philadelphia, 11 North Sixth St.
Chicago, 152 and 154 Lake St.
San Francisco, 2 and 4 California St.
St. Louis, 209 North Third Street.
" " 811 to 819 North Second St.
Cincinnati, 212 West Second St.
Indianapolis, Corner Maryland and Delaware Sts.
Louisville, 427 West Main St.
New Orleans, 96 Union St.

THE
Lake Shore & Michigan Southern
RAILWAY COMPANY.

CLEVELAND, O., August, 1880.

This Company desire to sell the following described Engines, for CASH. The Boilers of these engines are all in good condition, and the Engines are in good working order. For further information, address

A. C. ARMSTRONG, Purchasing Ag't L. S. & M. S. R'y.

Engines.	By Whom Built.	Cylinders. Driver.	Stroke.	Drivers. No.	Diameter.	Weight. Engine.	On Drivers.	Coal or Wood Burner.	Flues.	Thickness of Tire.	Cylinder.	Value.
7	S. Globe Works	12½	20	4	4.	36,000	36,000	Wood	Copper.	1½	Elevated	$1,500.00
8	" "	12½	20	4	4.	36,000	36,000	"	"	1½	"	1,500.00
25	Amoskeag	13	20	4	4.6	50,000	28,000	Coal	Iron.	1½	"	3,000.00
38	Swinburne	15	22	4	4.10	57,000	35,000	Wood	Copper.	2½	"	2,700.00
41	"	15	22	4	4.10	57,000	35,000	"	"	1¾	"	2,700.00
43	Hinckley & Drury	14	20	4	4.10	54,000	32,000	"	"	2	"	2,700.00
44	" "	14	20	4	4.6	54,000	32,000	"	"	2¼	"	3,000.00
53	Swinburne	15	20	4	4.10	58,000	35,000	"	"	2¼	Straight	4,000.00
80	Brusc Kneeland	15	22	4	5.6	56,000	34,000	"	"	1	"	3,000.00
82	" "	15	22	4	5.6	56,000	34,000	"	"	1½	"	2,500.00
85	" "	15	22	4	4.6	57,000	35,000	Coal	Iron.	1½	Elevated	3,000.00
130	Hinckley & Drury	14	20	4	4.6	54,000	32,000	Wood	Copper.	1½	"	3,000.00